PS

THE PREVENTIVE MAINTENANCE MONTHLY

Issue 33
1955 Series

Spirit of '76....

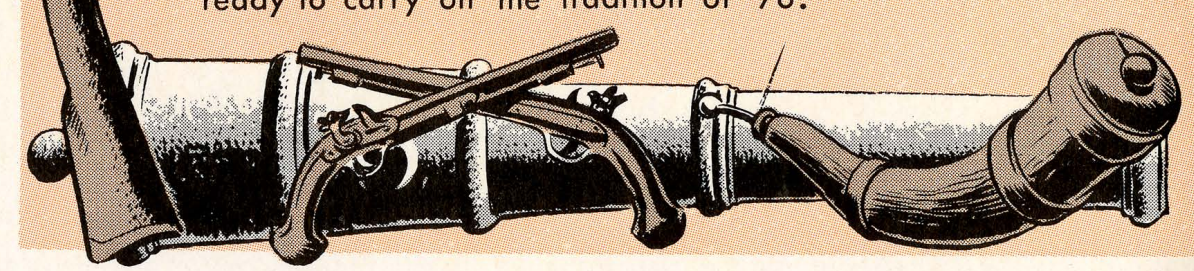
Times have changed a lot since the men back in '76 took their flint-lock rifles out to make sure they—and you here in 1955—could be free citizens.

Yep—times have changed, but one mighty important thing they did, and you still do, is the same today as it was in 1776. In fact, it's a bigger job now. That's maintaining your equipment.

Where the men of '76 had rifles and muzzle-loading cannon for weapons, and wagons for transportation, you have the best that can be produced of slick-operating weapons, tanks, trucks—you could add lots of things to the list.

And that's where the job gets bigger—maintaining all this equipment so's it'll operate and keep operating when the line is drawn and the chips are down. That's where **you** come in—to keep your rifle, Jeep, tank, gun or whatever you've got in tip-top shape. You do it with lubing, cleaning and the best of babying care and operating.

With the right kind of maintenance you and your equipment'll be ready to carry on the tradition of '76.



Spirit of '76....

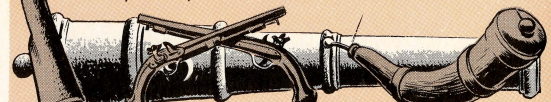
Times have changed a lot since the men back in '76 took their flint-lock rifles out to make sure they—and you here in 1955—could be free citizens.

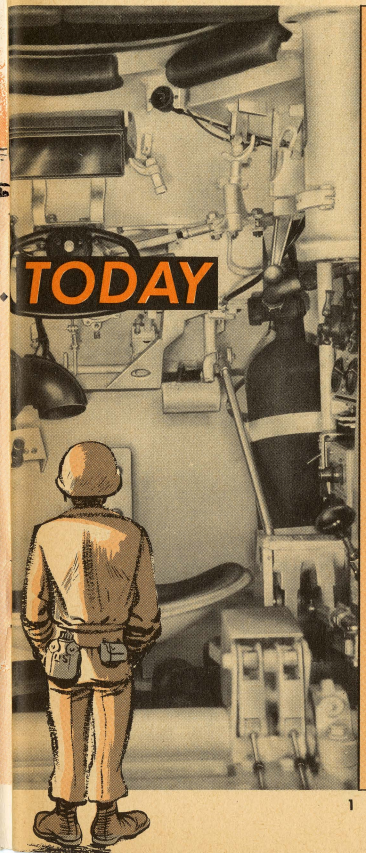
Yep—times have changed, but one mighty important thing they did, and you still do, is the same today as it was in 1776. In fact, it's a bigger job now. That's maintaining your equipment.

Where the men of '76 had rifles and muzzle-loading cannon for weapons, and wagons for transportation, you have the best that can be produced of slick-operating weapons, tanks, trucks—you could add lots of things to the list.

And that's where the job gets bigger—maintaining all this equipment so's it'll operate and keep operating when the line is drawn and the chips are down. That's where **you** come in—to keep your rifle, Jeep, tank, gun or whatever you've got in tip-top shape. You do it with lubing, cleaning and the best of babying care and operating.

With the right kind of maintenance you and your equipment'll be ready to carry on the tradition of '76.





PS MAGAZINE

Issue No. 33 **1955 Series**

Published by the Department of the Army for the information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limitations of availability, older issues may be obtained direct from Preventive Maintenance Agency, Raritan Arsenal, Metuchen, New Jersey.

IN THIS ISSUE

FEATURE ARTICLES

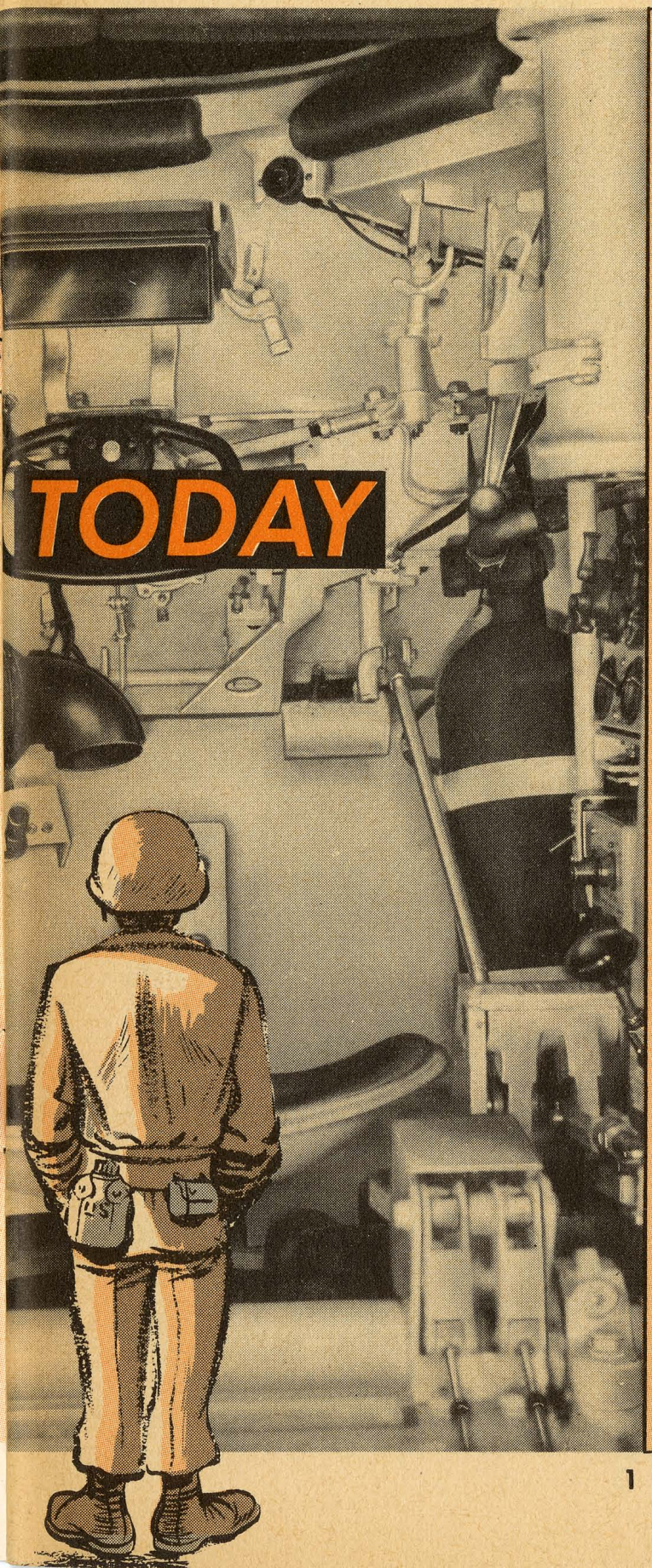
Decontamination 2
Cooling System Hose 13
Battery Storage 16
Trouble Shooting For Tanks 21
M48 Fire Control 34

DEPARTMENTS

Connie Rodd 10
Half-Mast 29
Publications Scoop 33
Engineers 42
Contributions 47
Connie Rodd's Briefs 49

PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write to: **Sgt Half-Mast, PS Magazine, Raritan Arsenal, Metuchen, New Jersey.** Names and addresses are kept in confidence.

The printing of PS Magazine, the PREVENTIVE MAINTENANCE MONTHLY, is approved by the Director, Bureau of the Budget (4 Aug. 53), and is distributed as follows: ACTIVE ARMY: Gen. Staff, DA (1) except G1 (2); SS, DA (1); Tec Svc, DA (5) except COFENGR (75); COFORD (275); Admin & Tec Svc Bd (5); COMARC (10); OS Maj Comd (5); OS Base Comd (3); NGW (5); Armies (50); Corps (3); Div (2) except Armd Div (100); Tng Div (50); Brig (3); Regt & Gp (3); Bn (4); Co (15) except Chem Co (8); Med Co (8); QM Co (8); Gen & Br Svc Sch (5) except Ord Sch (25); Engr Sch (100); USMA (25); Joint Sch (5); Specialist Sch (5); PMST (3) except Ord PMST (25); Gen Depots (5); Sec, Gen Depots (5); Depots (5); Army Hosp (5); USA Hosp (5); RTC (100); POE (3); OS Sup Agencies (2); PG (5); Arsenals (25); OB (25); Chief Main Sto (3); Engr Div (2), Ft & Cp (5); Engr Dist (2); NG & USAR: Special for explanation of abbreviations used see SR 320-50-1.



PS MAGAZINE

Issue No. 33 **1955 Series**

Published by the Department of the Army for the information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limitations of availability, older issues may be obtained direct from Preventive Maintenance Agency, Raritan Arsenal, Metuchen, New Jersey.

IN THIS ISSUE

FEATURE ARTICLES

Decontamination	**2**
Cooling System Hose	**13**
Battery Storage	**16**
Trouble Shooting For Tanks	**21**
M48 Fire Control	**34**

DEPARTMENTS

Connie Rodd	**10**
Half-Mast	**29**
Publications Scoop	**33**
Engineers	**42**
Contributions	**47**
Connie Rodd's Briefs	**49**

PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write to: **Sgt Half-Mast, PS Magazine, Raritan Arsenal, Metuchen, New Jersey.** Names and addresses are kept in confidence.

The printing of PS Magazine, the PREVENTIVE MAINTENANCE MONTHLY, is approved by the Director, Bureau of the Budget (4 Aug. 53), and is distributed as follows: ACTIVE ARMY: Gen. Staff, DA (1) except G1 (2); SS, DA (1); Tec Svc, DA (5) except COFENGR (75); COFORD (275); Admin & Tec Svc Bd (5); CONARC (10); OS Maj Comd (5); OS Base Comd (3); MDW (5); Armies (50); Corps (3); Div (2) except Armd Div (100); Tng Div (50); Brig (3); Regt & Gp (3); Bn (4); Co (15) except Chem Co (8); Med Co (8); QM Co (8); Gen & Br Svc Sch (5) except Ord Sch (25); Engr Sch (100); USMA (25); Joint Sch (5); Specialist Sch (5); PMST (3) except Ord PMST (25); Gen Depots (5); Sec, Gen Depots (5); Depots (5); Army Hosp (5); USA Hosp (5); RTC (100); POE (3); OS Sup Agencies (2); PG (5); Arsenals (25); DB (25); Cruit Main Sta (3); Engr Div (2); Ft & Cp (5); Engr Dist (2); NG & USAR: Special for explanation of abbreviations used see SR 320-50-1.

"G-A-A-A-S-S-S!!"

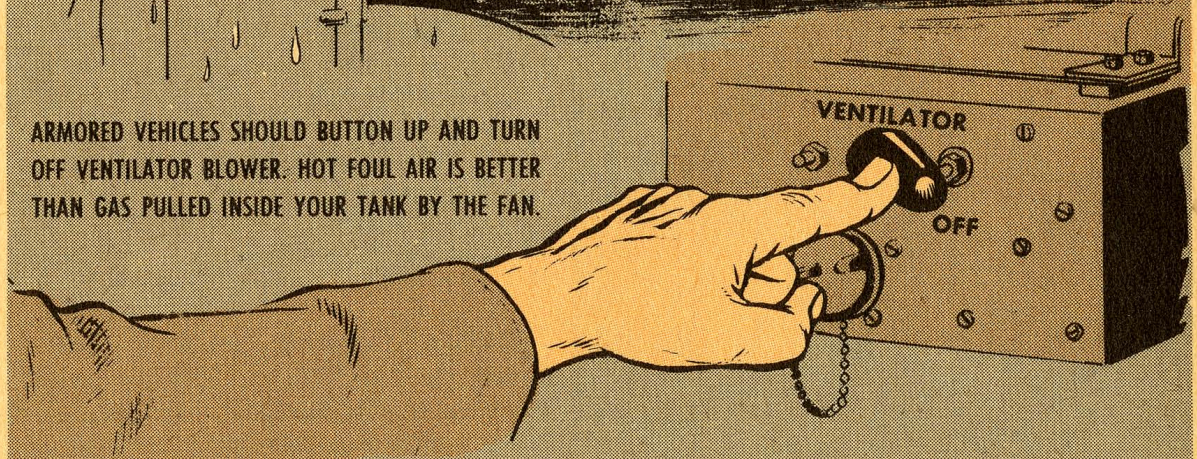
A run-down on what to do for your Equipment when somebody tosses Chemical, Biological or Atomic stuff in your direction

IF YOU'RE DRIVING A VEHICLE, GET INTO YOUR MASK RIGHT FAST LIKE EVERYBODY ELSE. WHAT YOU DO NEXT DEPENDS ON ORDERS PREVAILING IN YOUR AREA.

GET THAT CAB UP IF IT ISN'T ALREADY UP AN' CLOSE YOUR WINDOWS.

THE CAB WON'T STOP BOMB OR SHELL FRAGMENTS, BUT IT WILL DEFLECT GAS CLOUDS AND PROTECT YOU FROM SPRAY DROPLETS AND SPLASH.

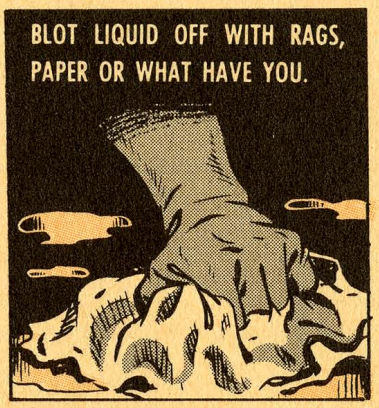
ARMORED VEHICLES SHOULD BUTTON UP AND TURN OFF VENTILATOR BLOWER. HOT FOUL AIR IS BETTER THAN GAS PULLED INSIDE YOUR TANK BY THE FAN.

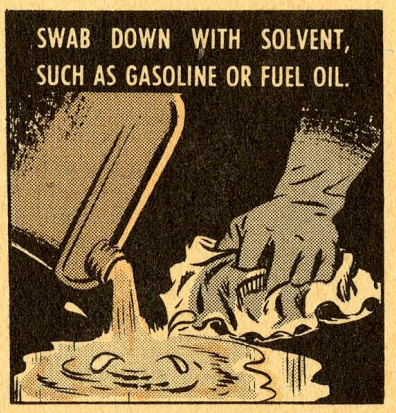


The main thing is this—keep your head and go on with your mission. Chemical attacks are intended to keep you from doing your job. The enemy'll try to follow up his advantage and catch you with your pants down. Don't let him.

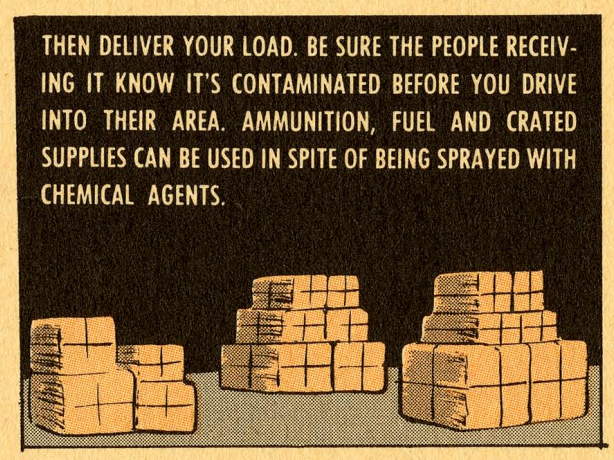
And besides, in the case of vehicles, going on your way is one of the best ways in the world to decontaminate your machine. The rush of air past the truck or tank will disperse the vapors of gas and will help evaporate liquids. **But keep your mask on.**

If your vehicle was splattered with liquid, you can make a short stop for rough and ready first-echelon decontamination as soon as you're outside the contaminated area, **if your mission permits.**

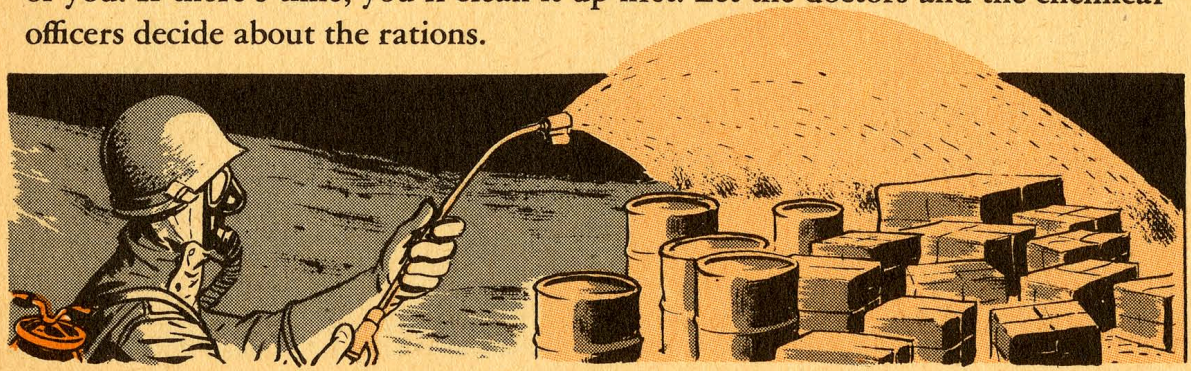


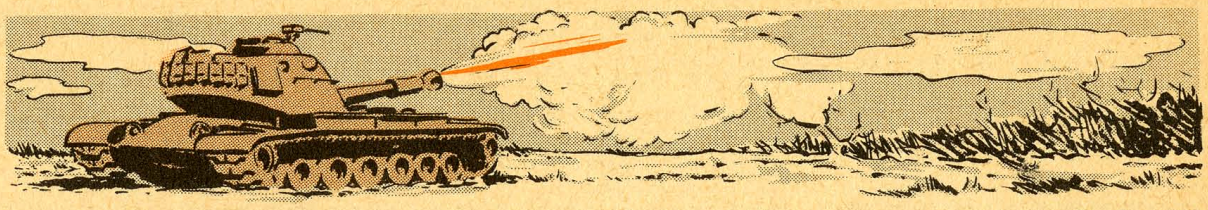


THEN DO THE SAME FOR THE OUTSIDE...



Be sure the guys getting them know they have been in a gas attack, on accounta they'll have to take some precautions in unloading and may have to decontaminate the containers before opening them. Naturally, what is done to your load will depend on what the load is, and what the situation is right then. Contaminated ammunition can still be used if the enemy is right on top of you. If there's time, you'll clean it up first. Let the doctors and the chemical officers decide about the rations.





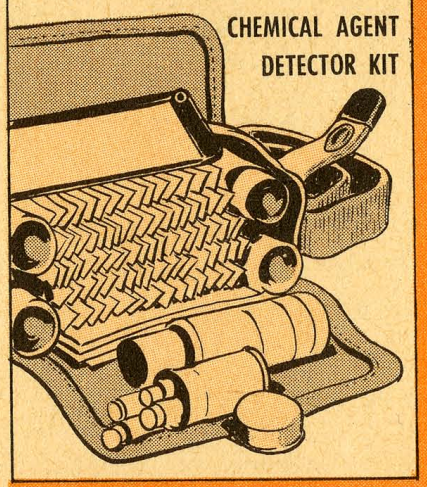
Combat vehicle crews'll have to go right on fighting and'll have to wait for orders from their commanders as to when they can break off combat and decontaminate their vehicles.

When you've delivered your loads and returned to your unit area, you don't drive into the bivouac area or the shop area with a contaminated vehicle. Stop outside your area, or in the appointed place if there is one, and let your CP or motor sergeant know that your vehicle has been gassed. They'll tell you where to take it for second echelon decontamination, and they'll also tell you where to go to get rid of your contaminated clothing and be checked over yourself.

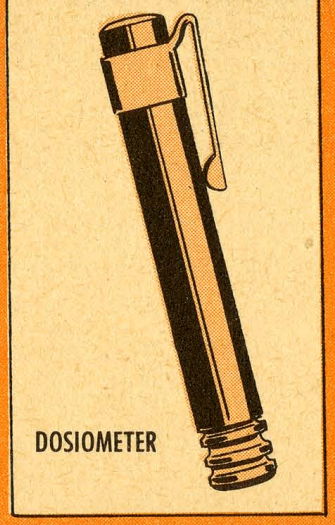
It may be that your vehicle won't be needed for 24 hours or more, in which case the natural ventilation may very well be enough to decontaminate it without any other action. BUT—you never put a truck which has been, or **may** have been, anywhere near chemical, biological or radiation contamination back in service without checking it carefully.

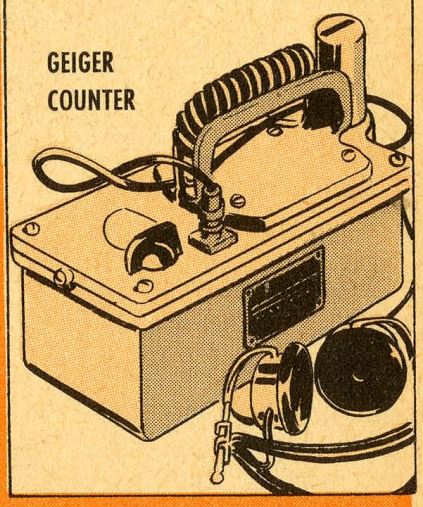
CHECK YOUR VEHICLES WITH THESE:

FOR CHEMICALS



FOR ATOMIC RADIATION



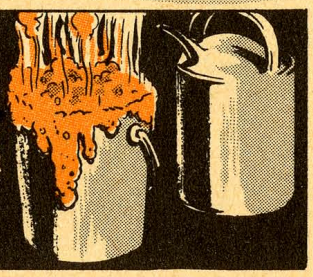


Whenever a unit knows that a chemical attack has hit, or is likely to hit any of its vehicles, the Old Man will start making plans for decontaminating them as soon as they can be returned to the area. Naturally, this'll be done in an area away from the shops and the bivouac, and if possible down-wind from these areas. You don't want to bring in contamination or let the wind blow it in.

HOW TO DECONTAMINATE

There are lots of ways to decontaminate vehicles and equipment. Any one, or any combination may be used, according to where you are and what you have handy. Units hit by a chemical attack may have to do some fast improvising of cleaning equipment. Remember that decontamination, especially of vehicles, is mostly cleaning.

HOT SOAPY WATER, PETROLEUM SOLVENTS, KEROSENE, FUEL OIL OR PLAIN WATER

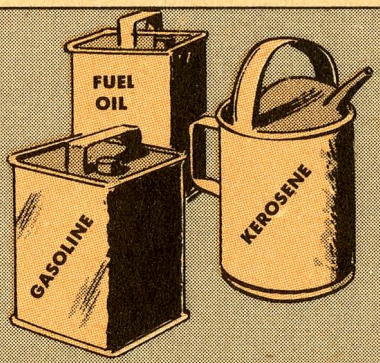


IF YOU HAVE A CHEMICAL AGENT DETECTOR KIT, DETERMINE WHETHER YOU HAVE BEEN HIT BY BLISTER OR NERVE GAS

IF IT'S NERVE GAS, WASH YOUR VEHICLE DOWN WITH SOAPY WATER OR ALKALINE SOLUTION (LIKE LYE WATER)

IF IT'S BLISTER GAS, USE DANC

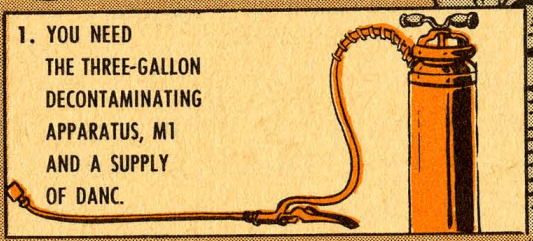
IF THERE'S DOUBT AS TO WHAT THE LIQUID IS, AND YOU'VE GOT THE TIME AND THE STUFF, THE "FIVE-STEP DANC METHOD" IS THE BEST DECONTAMINATION YOU CAN GIVE A TRUCK.



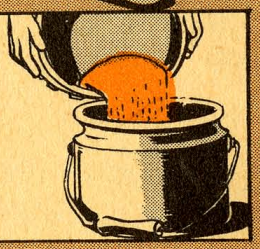
TO DO THIS, HERE'S WHAT YOU NEED: FIRST, A PETROLEUM SOLVENT. THE CHEMISTS CALL 'EM "ORGANIC" SOLVENTS, LIKE GASOLINE, KEROSENE, FUEL OIL, ETC.

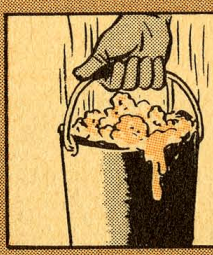
(Remember: Decontaminating a vehicle is the only *time you use gasoline for cleaning, like it tells you in TM 3-220, para 78-79, and be sensible about it; take precautions against fire and use it in a ventilated area.)*

1. YOU NEED THE THREE-GALLON DECONTAMINATING APPARATUS, M1 AND A SUPPLY OF DANC.

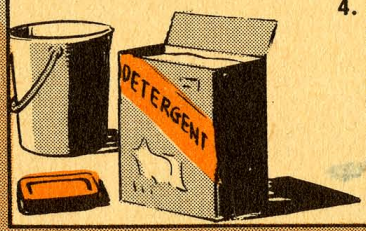


2. DANC COMES IN TWO-COMPARTMENT CANS. POUR ALL POWDER FROM TOP CONTAINER INTO ALL SOLVENT IN BOTTOM CONTAINER. STIR UNTIL DISSOLVED.





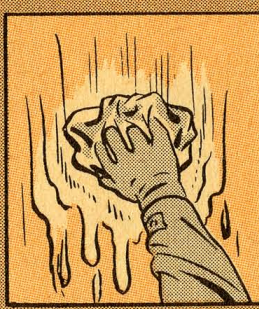
3. PLENTY OF HOT SOAPY WATER IN ANY SORT OF CONTAINER.



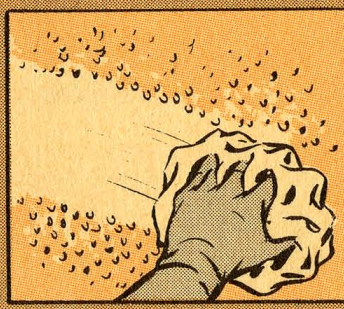
4. ORDINARY GI SOAP OR ANY SOAP POWDER OR DETERGENT. PLENTY PLAIN WATER FOR RINSING. THIS CAN BE COLD.

5. YOU'LL NEED A BUNCH OF RAGS AND A CAN OF LIGHT OIL, LIKE PL OR OE 10.

6. WEAR PROTECTIVE CLOTHING, YOUR MASK AND RUBBER GLOVES. VEHICLE IS STILL DANGEROUSLY CONTAMINATED.

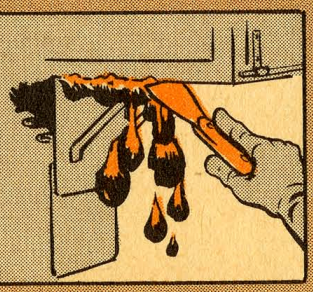


7. WASH HER DOWN WITH ORGANIC SOLVENT (GASOLINE, KEROSENE, ETC.) START AT TOP AND WORK DOWN, SO YOU DON'T WASH CONTAMINATION ON TO CLEAN AREA.

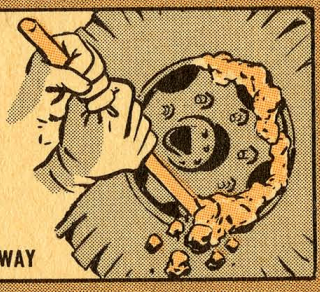


8. CLEAN OFF ALL THE VISIBLE DROPS OF CHEMICAL

9. ALSO, CLEAN OFF ALL OIL, GREASE AND ROAD SCUM FROM TRUCK. THIS HOLDS THE CHEMICAL AGENTS.



10. IF WHEELS ARE MUDDY, WORK MUD OFF WITH STICKS, AND SCRAPE ANY LOOSE MUD OFF THE INSIDE OF FENDERS THE SAME WAY

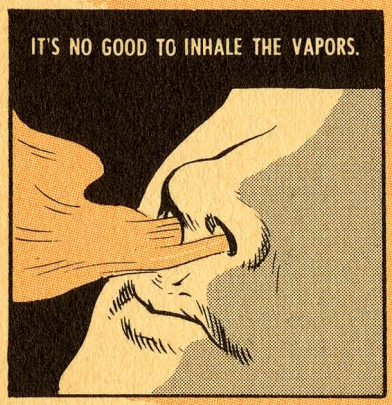


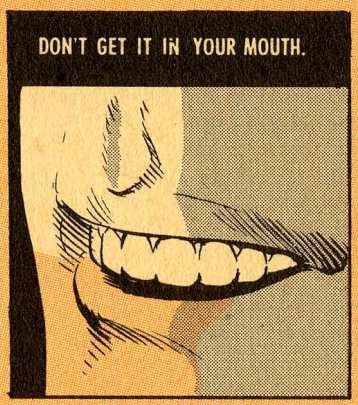
When you've got her clean as you can with the solvent, you're ready to use the DANC.

USE DANC

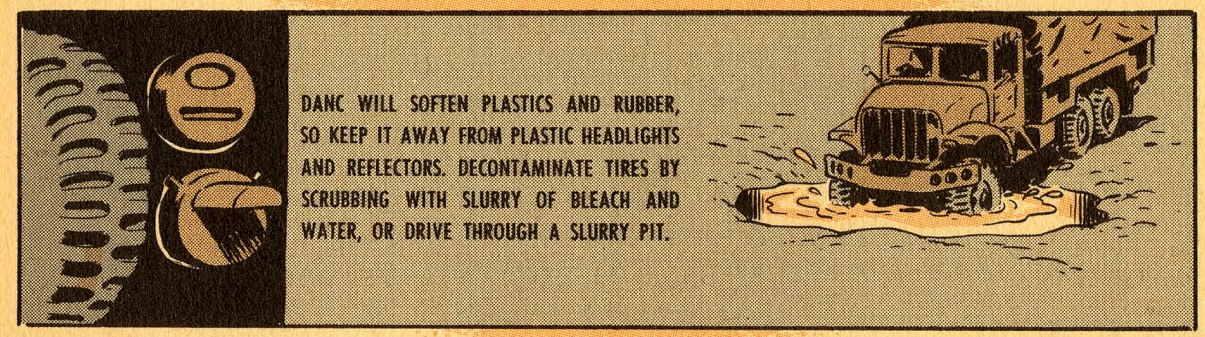
Fifteen minutes after that you do it a 3rd time. Remember, the reaction by which DANC delouses the chemicals takes time, so the three light coats are far more effective than one heavy coat would be.

DANC is wonderful stuff, but it has some drawbacks. The solvent, acetylene tetrachloride, is toxic.



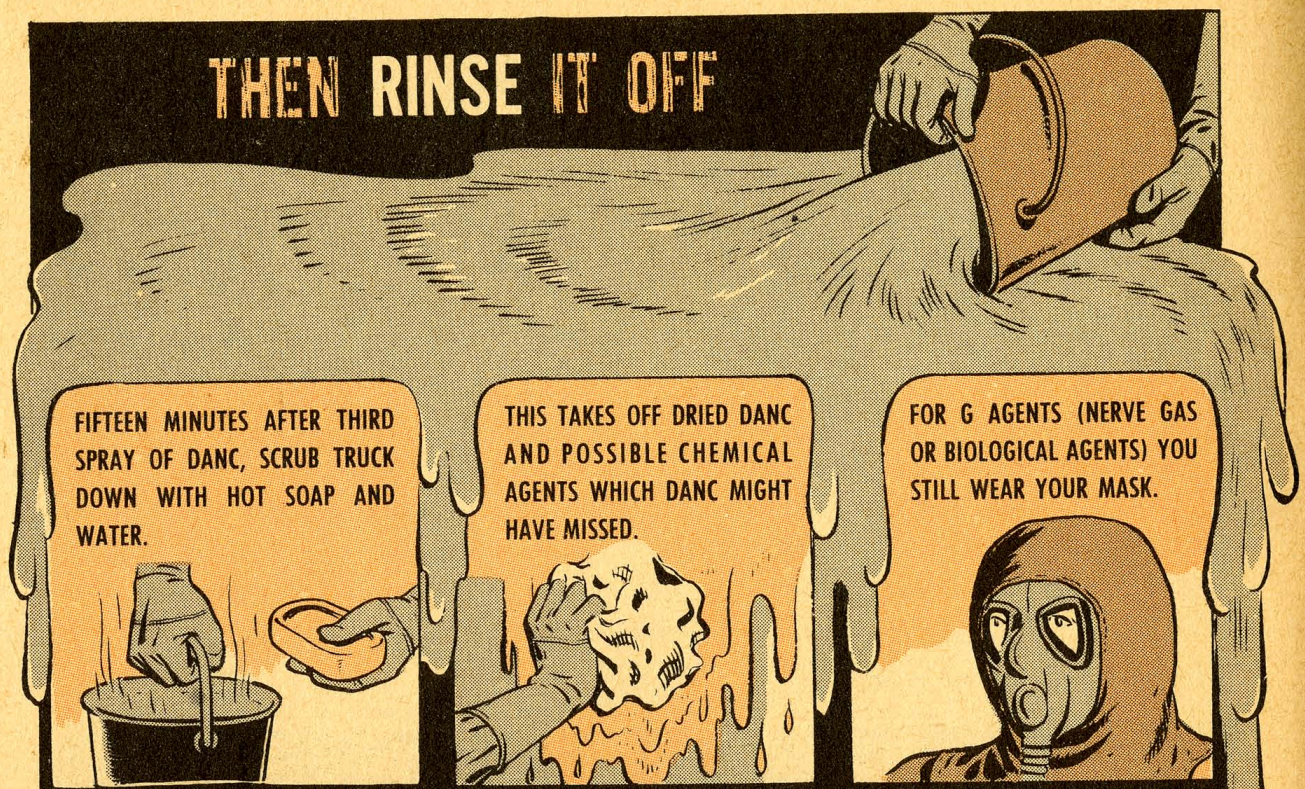


You'll end up with a bad liver. That's why you still wear the mask and gloves while you use it.



If you haven't got any bleach, you'll do better to decontaminate your tires with DANC than not to do anything to them. DANC will reduce the useful life of the tire, but it's not so severe that it'll ruin them right then and right there.

THEN RINSE IT OFF



FIFTEEN MINUTES AFTER THIRD SPRAY OF DANC, SCRUB TRUCK DOWN WITH HOT SOAP AND WATER.

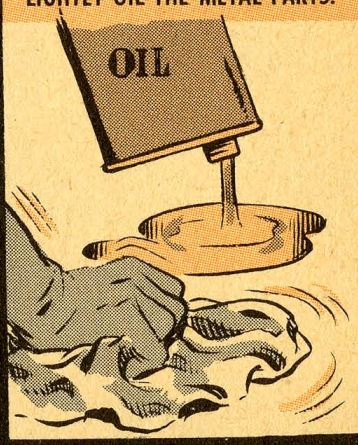
THIS TAKES OFF DRIED DANC AND POSSIBLE CHEMICAL AGENTS WHICH DANC MIGHT HAVE MISSED.

FOR G AGENTS (NERVE GAS OR BIOLOGICAL AGENTS) YOU STILL WEAR YOUR MASK.

SCRUB HER DOWN GOOD ALL OVER. RINSE WITH CLEAR WATER.

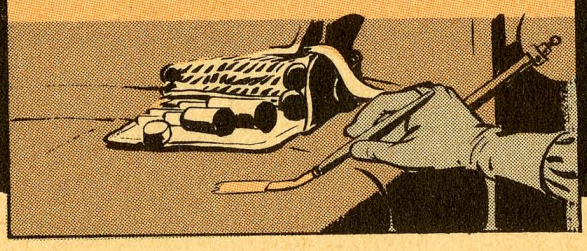
GRAB THE RAGS AND DRY.

LIGHTLY OIL THE METAL PARTS.

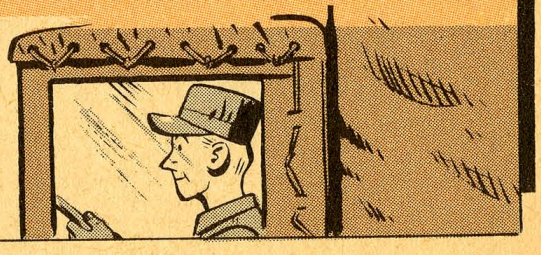


Although DANC is called non-corrosive, you've got to remember that it has some tendency to corrode metal.

WHEN YOU'VE FINISHED DECONTAMINATING YOUR VEHICLE CHECK IT WITH YOUR DETECTOR KIT.

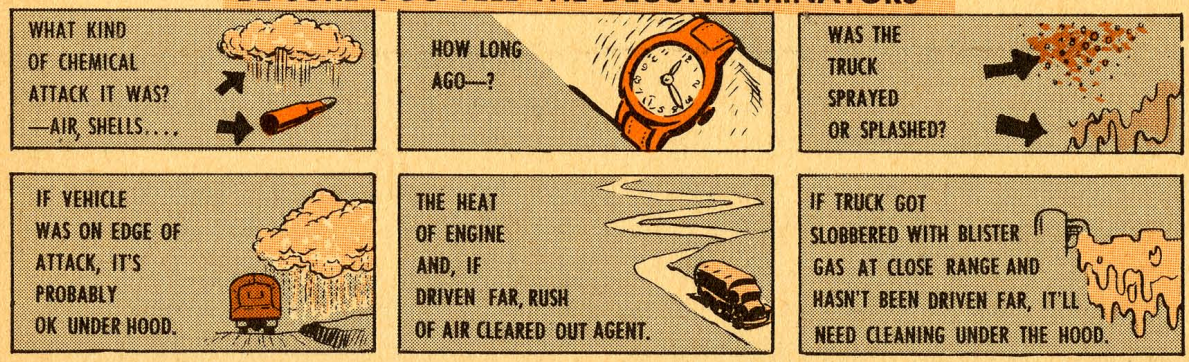


THEN YOU'RE SAFE TO OPERATE IT WITHOUT PROTECTIVE CLOTHING OR GAS MASK.



Here are a few ideas which may help you. In the first place, there are men in your unit who are trained in decontamination. They'll supervise the whole job. Let them make the decisions as to what and how the work is to be done.

BE SURE YOU TELL THE DECONTAMINATORS—



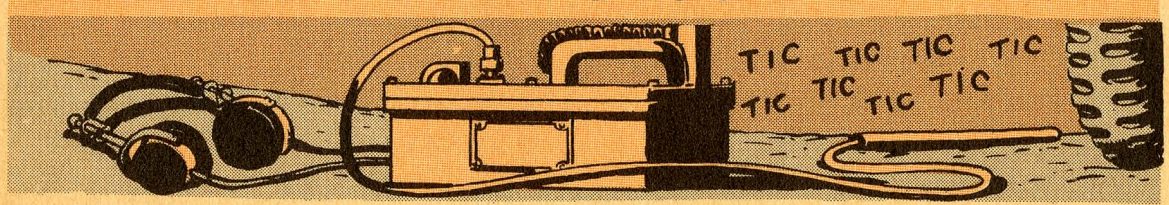
If a lot of vehicles from one unit get contaminated at the same time, naturally it'll pay to set the decontaminating up on an assembly-line basis, with a crew at each station doing one phase.

OK FOR BIOLOGICAL, TOO

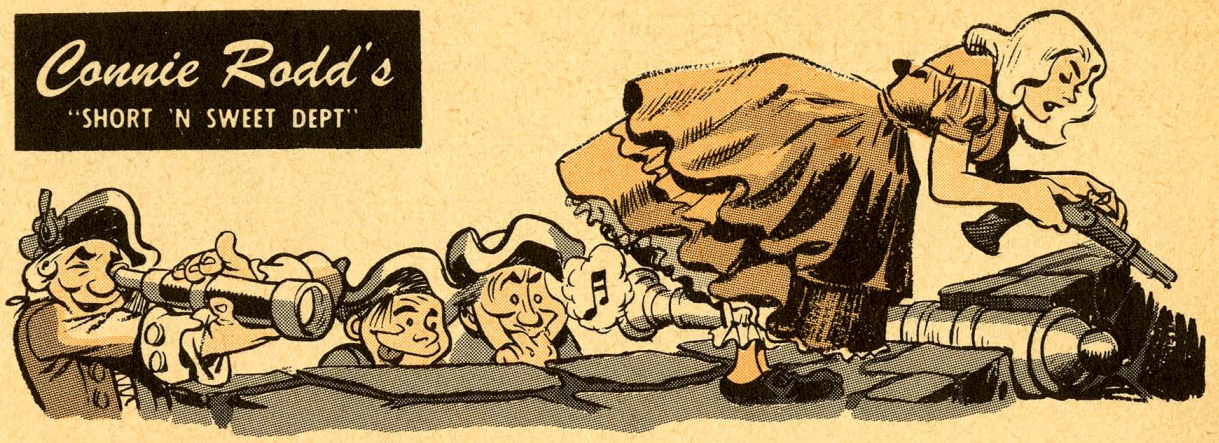
Incidentally, this method of decontamination takes care of Biological elements as well as chemicals. In the first place, if you don't get caught in the first heavy aerosol (that's a six-bit word for spray) of a biological attack, you haven't too much to worry about anyhow. On top of that, the washing, and particularly the hot soap scrub will take care of any lingering germs.

Radiation? It's grim but simple. If your vehicle is close enough under an air burst to receive any induced radiation, it'll be destroyed anyhow; you won't have to decontaminate it. As for areas around ground bursts, the trained men will check them out with the click boxes before you enter them, and hang up signs in the danger areas.

The same thing goes for radioactive fall out. Just avoid the posted areas, and if you think your truck is "hot," get a geigerman to check it.



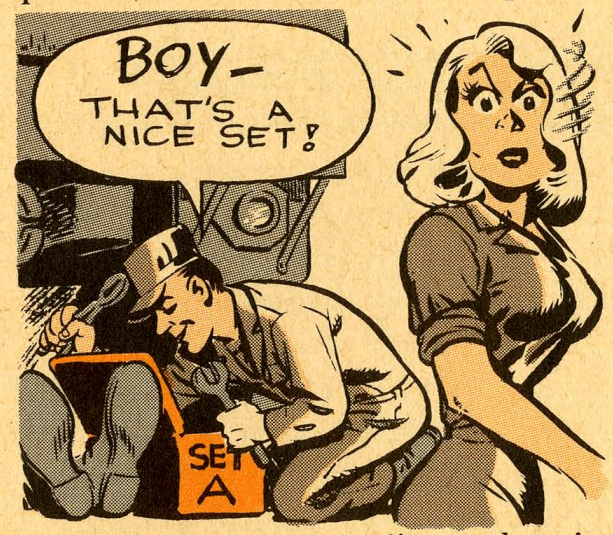
Connie Rodd's
"SHORT 'N SWEET DEPT"



Tool sets—a and b

Been wonderin' how you can get Special Tool Sets A and B? Wonder no more, 'cause here's the basis of issue, just like it says in DA Circular No 725-2.

Set A: One per lettered battery or company; headquarters of units above battalion level; and battalion headquarters, when it has a service company.



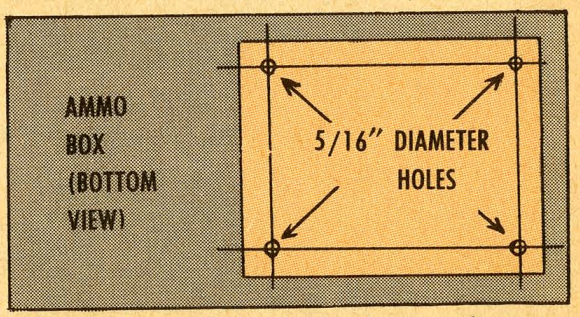
Set B: One per battalion and regiment headquarters (except when battalion or regiment has a service company); service company numbered battery or company; and similar headquarters performing maintenance work for other units.

All units should have either an A or B set, but not both. Ordnance units authorized 3rd, 4th or 5th Echelon sets don't get A or B sets because the tools are duplicated in the higher echelon sets. However, a unit has to be authorized a mechanic to get set A or B.

Operation rusty

Keeping those 40-mm ammo boxes free from rust on your M42 vehicle used to be a big job. Worry no more—a new fix makes your job a lot easier and will help keep those boxes nice'n dry.

All you've gotta do so's you'll have no more rust is drag your 5/16-in drill out of moth balls and put four holes in the bottom of the boxes, one in each corner. 'Course you gotta remove the boxes and turn 'em over to drill 'em. Your troubles are over.

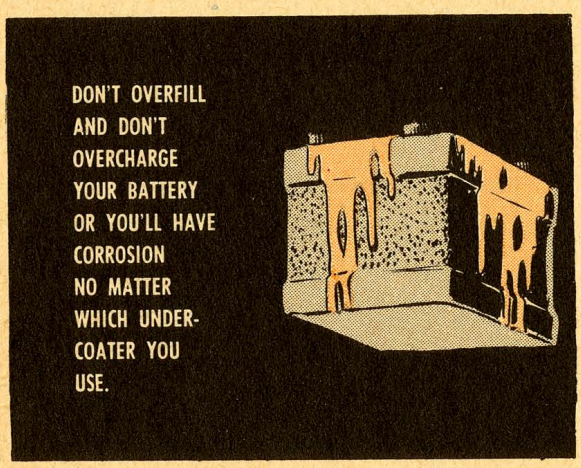


A technical bulletin is on the way telling you all about this.

Here's that undercoater

Some of you have been asking about using undercoater on your battery carriers. Well, you can if the Ordnance Officer will let you. Ask for—

Asphalt, Petroleum, sealing type, (TT-C-520)		
Federal Stock Number	**Ord Stock Number**	**Can Size**
5610-221-1834	52-C-3259-100	1 Gal
5610-221-1835	52-C-3259-125	5 Gal
5610-221-1833	52-C-3259-135	55 Gal

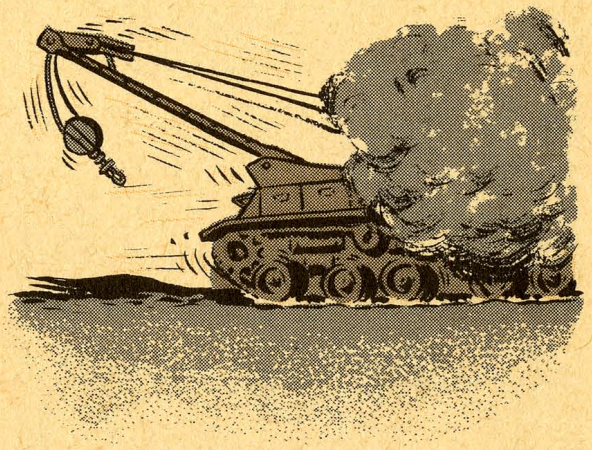


Lower the boom

Before you move your M74 medium recovery vehicle, always be sure the boom is lowered into travel position and the travel-lock secured.

You see, whenever that boom is bounced around by traveling without locking it down, it acts like a big pump handle, and builds up some pretty high pressures in the hoses. There are some extra safety-valves in the boom-control 4-way valve to protect things from busting up, but nevertheless, the bouncing doesn't do it any good.

Whenever you're raising or lowering the boom, be sure to hold your control-valve open until you're sure you've popped the main oil-pressure relief-valve. The noise'll change and the engine'll speed up when you pop the valve. Only then can you be sure you have the boom either fully up or fully down.



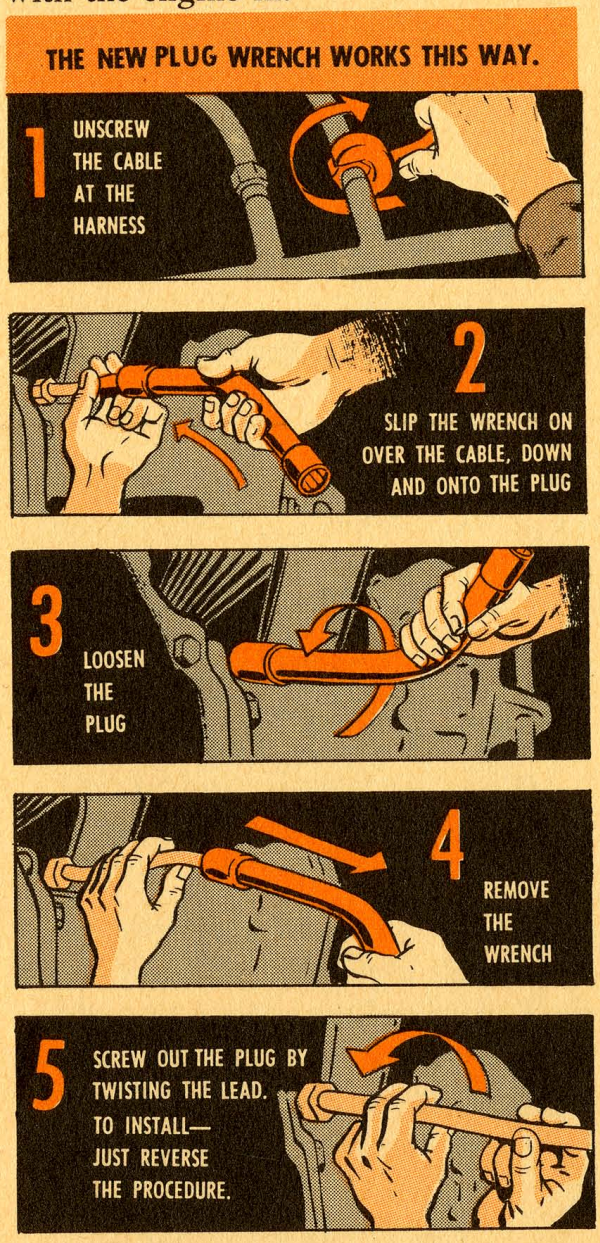
And for goshsakes, don't attempt to make a lift from the boom until it's all the way up and the boom-support stay-cables are tight. If you do, you use your lift to build up excess pressure in the lines, and they may carry away.

No torque-fest

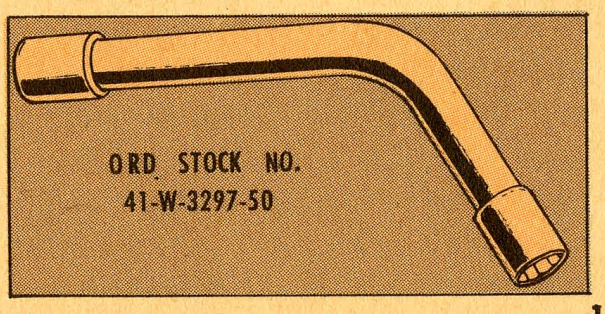
Latest word on installing those aircraft type spark plugs in your track-wagon's engine is that you don't have to torque 'em. Just take care to leave each plug snug—not too tight, not too loose—just snug. A change to publications is on the way telling you that you don't need to torque 'em any more.

The thing to use is this new plug persuader for all AV-1790 and

AOS-895 engines. It takes 'em out with the engine in.



Take care to avoid side pressure—keeping the wrench in line with the plug as y'loosen it—and those heli-coil inserts'll stay put.



"I been thinkin'"

Keepin' those unserviceable assemblies and those in long supply around so you can stumble and fall over 'em with those size 12's is just plain silly.

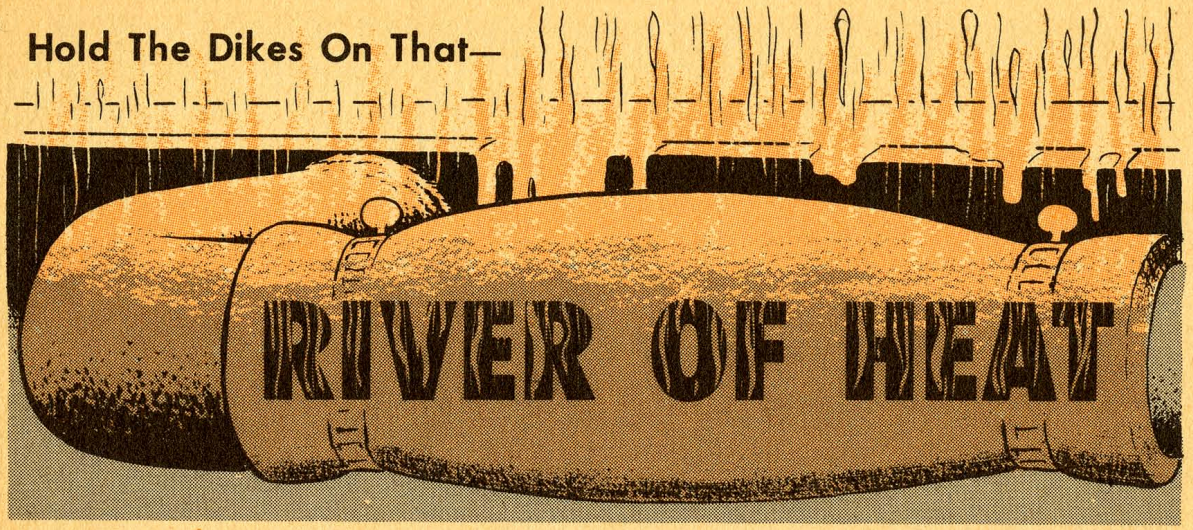
If you want to do yourself a big favor and keep the stock control boys happy you'll turn 'em in so the "reporting units" will know they exist. This way they won't be ordering new ones when it's not necessary. Besides, if you don't, maybe the guy who needs 'em will be borrowing your vehicle, and that's no good.

Many of these unserviceable assemblies can be fixed and put back into service real fast—so let's get on the ball and turn 'em in pronto.

Light tank edition

You men with the M41, M41A1 and other vehicles of the light-tank family can still get free copies of PS Magazine Issue No. 14 (Bulldog Edition). Just write to PS Magazine, Raritan Arsenal, Metuchen, N. J. Tell how many you need, and they'll be sent as fast as the mails go.

Hold The Dikes On That—

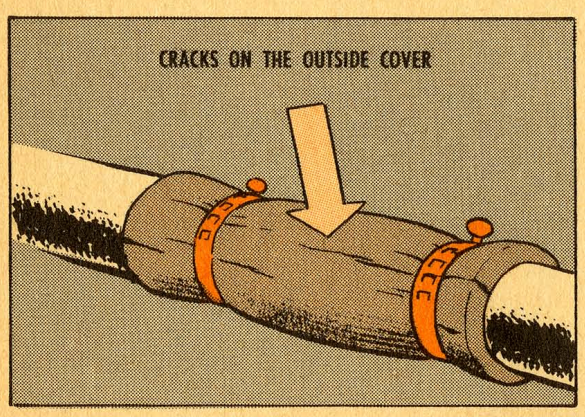


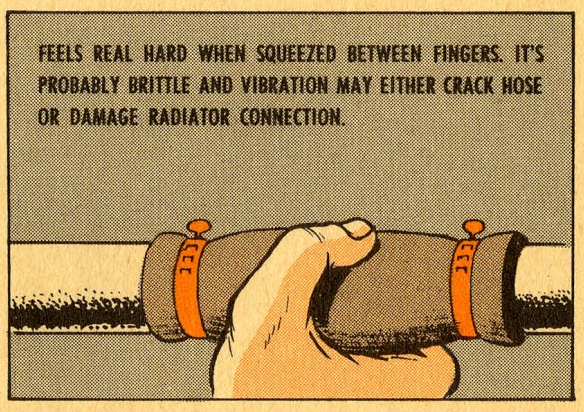
No doubt about it — your engine's cooling system's got a man-sized job. The close tolerances of your engine should be held within three degrees of operating temperature for best results.

In the liquid-cooled engine, the thermostat controls the heat's lower limit, while the upper limit depends on its radiator, oil and water pumps. Depending on the engine, those water pumps must circulate from 4,000 to 10,000 gallons of coolant an hour—enough to fill an average-size swimming pool in just a couple of hours.

Anything that'll interrupt the flow of coolant can make the engine overheat. If that happens for only a little while, you're headed for trouble. And one cause for overheating is a bad radiator or heater hose. Just one partly clogged or leaking hose can slow down or stop the coolant's flow.

This shouldn't happen to you. Check the hose closely, 'cause often it may seem OK, but is actually rotting away on the inside or is about to crack. Look for these trouble signs:

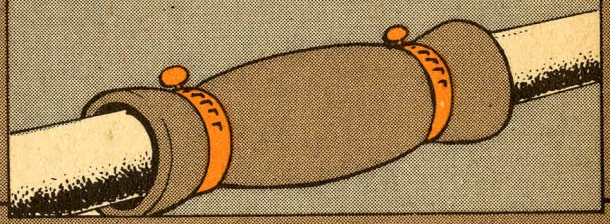




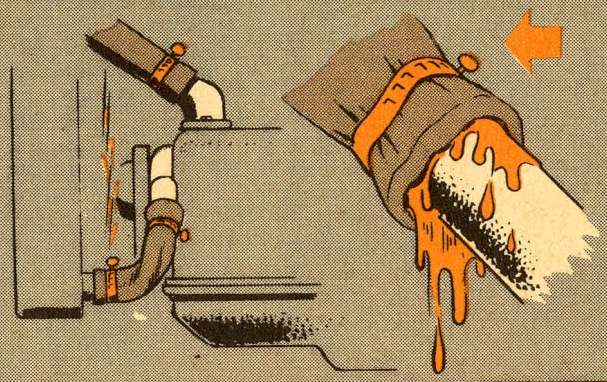
If it feels real **soft,** it's probably rotting out, This can fill the cooling system with small particles of rubber which can clog and overheat the engine.

MOISTURE AROUND THE CONNECTIONS WHEN THE CLAMPS ARE ON RIGHT. IT'S ROTTED INSIDE AND THE WATER'S COMING THROUGH.

PUFFS OUT AT THE ENDS. HOSE HAS BEEN AROUND A LONG TIME AND ITS LINING'S ROTTING AWAY.



CHECK THE HOSE WHILE THE ENGINE'S RUNNING. (STAY CLEAR OF THE FAN BLADES.) IF HOSE COLLAPSES BECAUSE OF VACUUM CREATED BY WATER PUMP'S RUNNING AT HIGH SPEED, IT COULD BE ROTTED AND WEAK.



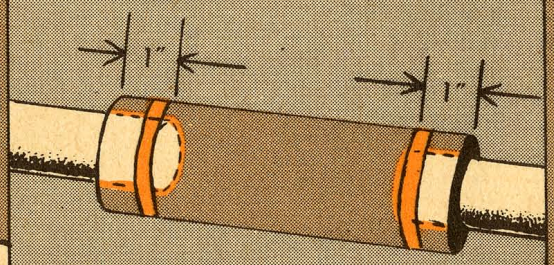
AND CHANGE CLAMPS WHEN NECESSARY. BENT ONES LEAVE ROOM FOR LEAKS WHEN THE PUMP'S AT HIGH SPEED.

HOW TO PUT HOSE ON HER

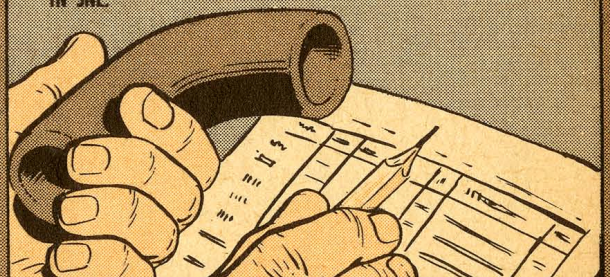
WHEN IT COMES TO HOSES, USE THE ONE CALLED FOR IN THE BOOK. NOT ONLY MAY THE SHAPE BE DIFFERENT FOR YOUR VEHICLE, BUT IT COULD BE CONSTRUCTED WITH THE SPECIAL DEMANDS OF YOUR ENGINE AND PUMPS IN MIND. AND TRY TO GET A NEW HOSE . . . OLD ONES MAY HAVE ONE FOOT IN THE GRAVE.

HERE ARE SOME GOOD TIPS ON INSTALLING A HOSE. IF YOU USE 'EM, YOU'LL NOT ONLY GET A BETTER INSTALLATION . . . IT CAN SAVE YOU TIME AND EFFORT TOO:

LEAVE ABOUT 1 INCH OF HOSE AT EACH END FOR CLAMPING.

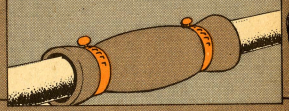


FOR CURVED CONNECTIONS . . . USE ONLY THOSE CALLED FOR IN SNL.

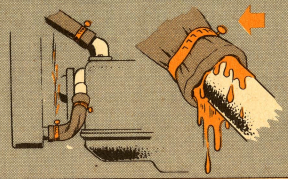


MOISTURE AROUND THE CONNECTIONS WHEN THE CLAMPS ARE ON RIGHT. IT'S ROTTED INSIDE AND THE WATER'S COMING THROUGH.

PUFFS OUT AT THE ENDS. HOSE HAS BEEN AROUND A LONG TIME AND ITS LINING'S ROTTING AWAY.



CHECK THE HOSE WHILE THE ENGINE'S RUNNING. (STAY CLEAR OF THE FAN BLADES.) IF HOSE COLLAPSES BECAUSE OF VACUUM CREATED BY WATER PUMP'S RUNNING AT HIGH SPEED, IT COULD BE ROTTED AND WEAK.



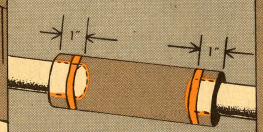
AND CHANGE CLAMPS WHEN NECESSARY. BENT ONES LEAVE ROOM FOR LEAKS WHEN THE PUMP'S AT HIGH SPEED.

HOW TO PUT HOSE ON HER

WHEN IT COMES TO HOSES, USE THE ONE CALLED FOR IN THE BOOK. NOT ONLY MAY THE SHAPE BE DIFFERENT FOR YOUR VEHICLE, BUT IT COULD BE CONSTRUCTED WITH THE SPECIAL DEMANDS OF YOUR ENGINE AND PUMPS IN MIND. AND TRY TO GET A NEW HOSE . . . OLD ONES MAY HAVE ONE FOOT IN THE GRAVE.

HERE ARE SOME GOOD TIPS ON INSTALLING A HOSE. IF YOU USE 'EM, YOU'LL NOT ONLY GET A BETTER INSTALLATION . . . IT CAN SAVE YOU TIME AND EFFORT TOO:

LEAVE ABOUT 1 INCH OF HOSE AT EACH END FOR CLAMPING.

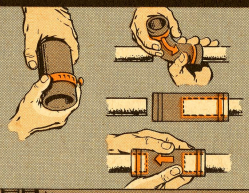


FOR CURVED CONNECTIONS . . . USE ONLY THOSE CALLED FOR IN SNL.

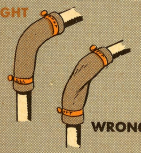
SCRAPE AND CLEAN OFF PIECES OF OLD HOSE ON METAL CONNECTIONS TO BE SURE OF A WATER-TIGHT SEAL.

BE SURE YOUR CLAMPS ARE THE RIGHT SIZE.

SLIP CLAMPS OVER HOSE BEFORE PUTTING HOSE ON CONNECTIONS UNLESS YOU'RE USING UNIVERSAL CLAMPS.

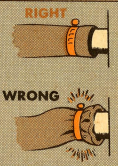


FOR STRAIGHT HOSE ON SHORT, HARD TO REACH CONNECTIONS, BEND HOSE IN MIDDLE. SLIP ONE END OVER METAL CONNECTION AND PUSH IT ON AS FAR AS IT'LL GO. THEN PUT OTHER END ON IT'S CONNECTION AND CENTER IT FOR CLAMPS.

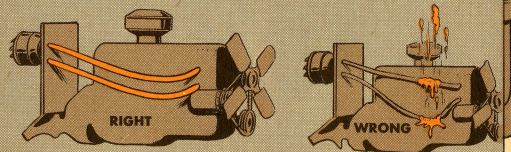


BEFORE YOU TIGHTEN CLAMP BE SURE HOSE IS SET NATURALLY WITHOUT ANY TWIST.

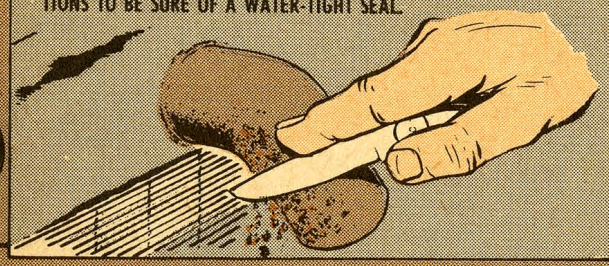
TIGHTEN CLAMPS FIRMLY BUT NOT SO TIGHT HOSE'LL PUFF OUT OR BE CUT. CHECK THOSE CLAMPS OFTEN.



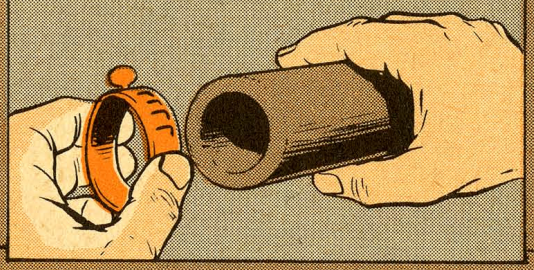
SO'S THE ENGINE'S VIBRATION WON'T PULL IT, ALLOW SLACK IN THE HEATER HOSE. BUT BE SURE THE HOSE ISN'T TOUCHING THE HOT ENGINE.



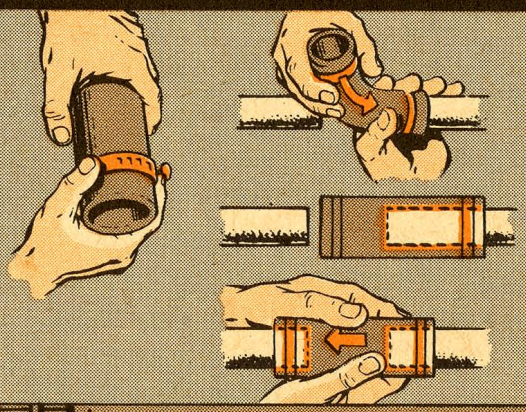
SCRAPE AND CLEAN OFF PIECES OF OLD HOSE ON METAL CONNECTIONS TO BE SURE OF A WATER-TIGHT SEAL.



BE SURE YOUR CLAMPS ARE THE RIGHT SIZE.

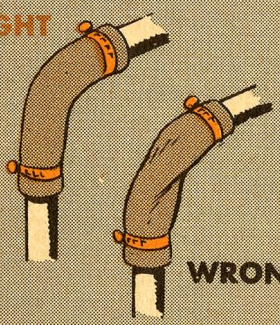


SLIP CLAMPS OVER HOSE BEFORE PUTTING HOSE ON CONNECTIONS UNLESS YOU'RE USING UNIVERSAL CLAMPS.



FOR STRAIGHT HOSE ON SHORT, HARD TO REACH CONNECTIONS, BEND HOSE IN MIDDLE, SLIP ONE END OVER METAL CONNECTION AND PUSH IT ON AS FAR AS IT'LL GO. THEN PUT OTHER END ON IT'S CONNECTION AND CENTER IT FOR CLAMPS.

RIGHT



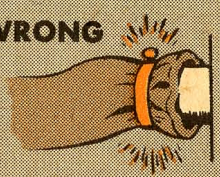
WRONG

BEFORE YOU TIGHTEN CLAMP BE SURE HOSE IS SET NATURALLY WITHOUT ANY TWIST.

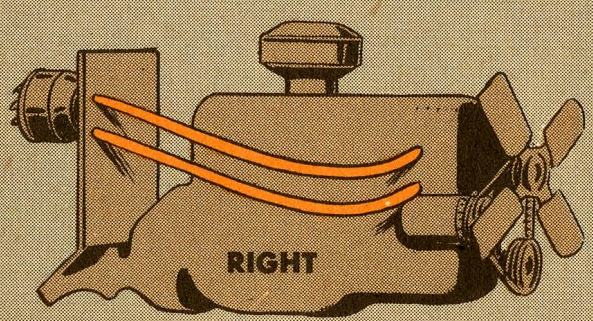
TIGHTEN CLAMPS FIRMLY BUT NOT SO TIGHT HOSE'LL PUFF OUT OR BE CUT. CHECK THOSE CLAMPS OFTEN.

RIGHT

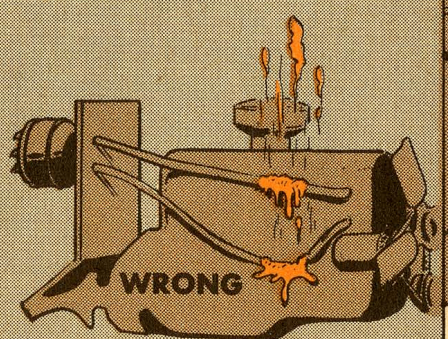
WRONG



SO'S THE ENGINE'S VIBRATION WON'T PULL IT, ALLOW SLACK IN THE HEATER HOSE. BUT BE SURE THE HOSE ISN'T TOUCHING THE HOT ENGINE.

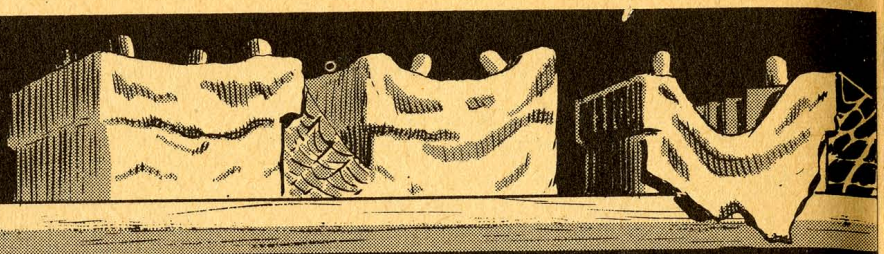


RIGHT



WRONG

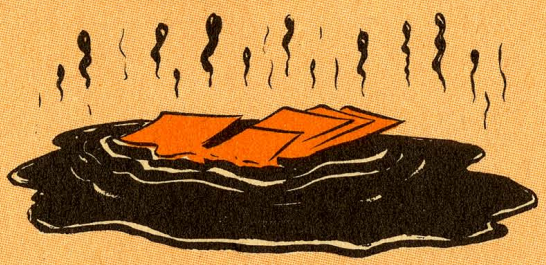
Half-Mast Says:
Batteries Can't Stand
Shelf Storage Or—



YOU'LL LOSE Y'R

After they've once been charged, that is.

It's unfortunate, but once a lead-acid storage battery has been filled and charged, it's started on its service life, and you can't stop the process. Just try to put one away and forget it—when you come back you've got a box full of plates, but no battery.



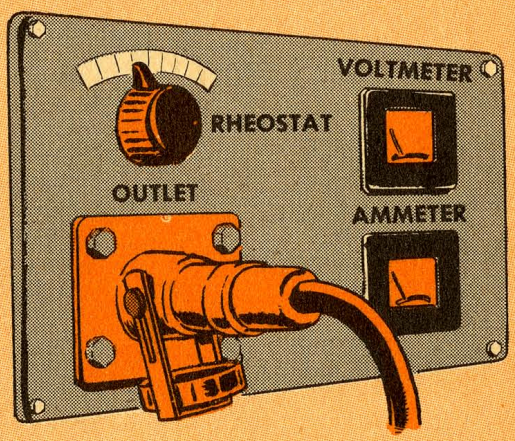
This has caused lots of trouble and woe to the people who have to put vehicles in storage, limited storage, or stand-by status. The National Guard in particular has been having an awful time, since they have to keep their fleet ready-to-roll but don't get to use it much.

There's no easy answer—and no easy way out of this problem. The only thing that will keep a battery in good condition during storage is frequent recharging. And running the vehicle 30 minutes once a week is **NOT** going to do it.

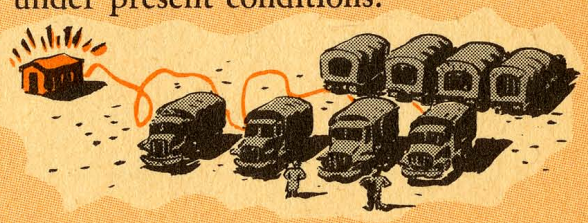
Here are some hints on what you ought to do.

DIRECT CURRENT LINE

The ideal situation would be a truck park which had direct current wired all through it with an outlet, a rheostat, and a voltmeter-ammeter combination at each vehicle. Such a setup would permit leaving the batteries in the vehicles, would let you keep them constantly charged, and the trucks could be started and rolled on a minute's notice. But to

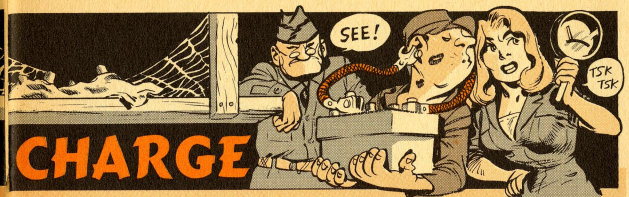


be safe, such a setup requires the constant attention of expert battery men. So it's not practical for most of you under present conditions.



Half-Mast Says:
Batteries Can't Stand
Shelf Storage Or—

YOU'LL LOSE Y'R CHARGE



After they've once been charged, that is.

It's unfortunate, but once a lead-acid storage battery has been filled and charged, it's started on its service life, and you can't stop the process. Just try to put one away and forget it—when you come back you've got a box full of plates, but no battery.

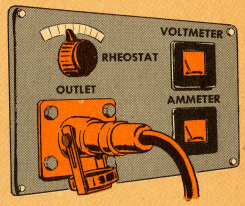
This has caused lots of trouble and woe to the people who have to put vehicles in storage, limited storage, or stand-by status. The National Guard in particular has been having an awful time, since they have to keep their fleet ready-to-roll but don't get to use it much.

There's no easy answer—and no easy way out of this problem. The only thing that will keep a battery in good condition during storage is frequent recharging. And running the vehicle 30 minutes once a week is **NOT** going to do it.

Here are some hints on what you ought to do.

DIRECT CURRENT LINE

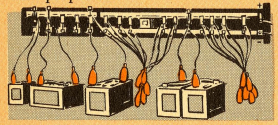
The ideal situation would be a truck park which had direct current wired all through it with an outlet, a rheostat, and a voltmeter-ammeter combination at each vehicle. Such a setup would permit leaving the batteries in the vehicles, would let you keep them constantly charged, and the trucks could be started and rolled on a minute's notice. But to



be safe, such a setup requires the constant attention of expert battery men. So it's not practical for most of you under present conditions.

USE A CHARGER

The next best thing is a battery shop with one or more motor-generator battery chargers (Stock No. 17-C-8780-75). Each one will accept as many as 40 batteries for finishing charge, and can maintain up to about 200 with proper use.



This charger is not normally issued to TO&E units, but is an Ordnance shop item. However, your unit can get one if you show the need, and lots of vehicles in storage will establish the need.

Ask your Ordnance supply officer how to go about getting one. (Remember, this charger uses 220-volt, 3-phase, AC. Be sure you've got this kind of power at your battery shop.)

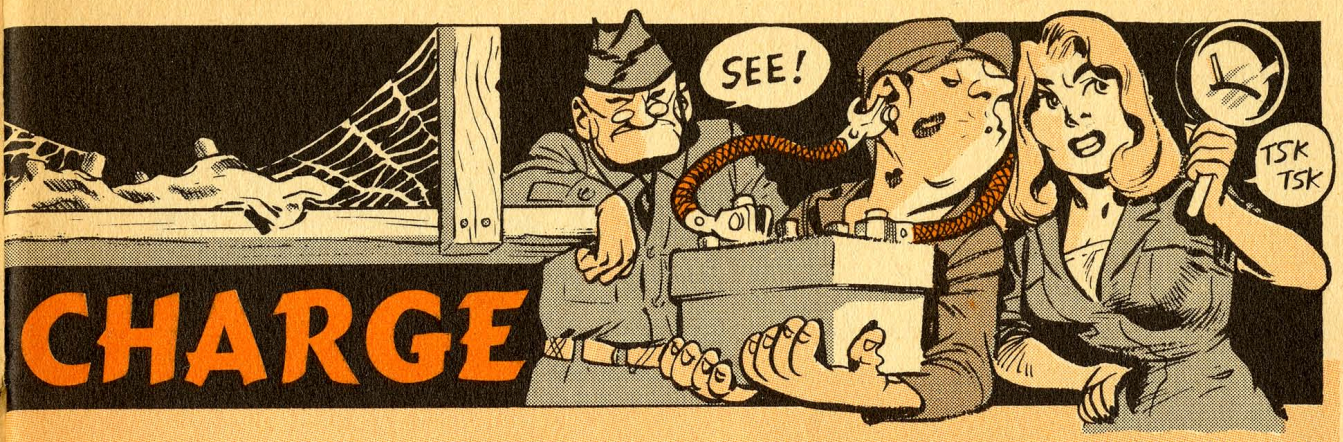
If you don't have enough vehicles to justify getting a big motor-generator charger, you can get one or more of the bulb-type rectifier chargers, (Stock No. 17-C-8740). It'll charge six 12-volt batteries at a time, or, the smaller one (Stock No. 17-C-8730) will charge three at a time.

Of course, you **can** use the gasoline-driven battery charger which comes in your second-echelon equipment. But if you have to use this charger to keep up a bunch of batteries in storage for very long, it'll be worn out when you go into the field, and you'll be hurting. Besides, an electric charger is cheaper both to buy and to operate.

KEEP 'EM CHARGED

How often you need to charge your batteries will depend on two things, the temperature where they're stored, and how careful and clean you are about checking and filling them. Batteries will

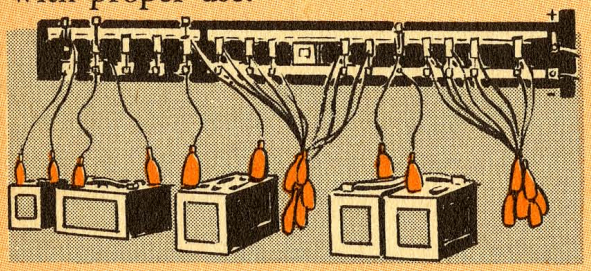
discharge themselves when stored, and the rate at which they do is determined largely by the temperature. The cooler, the longer the charge lasts.



CHARGE

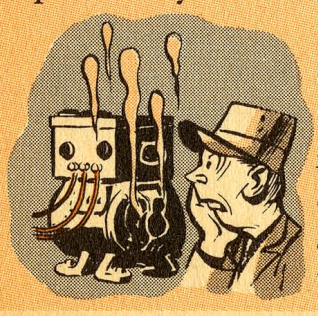
USE A CHARGER

The next best thing is a battery shop with one or more motor-generator battery chargers (Stock No. 17-C-8780-75). Each one will accept as many as 40 batteries for finishing charge, and can maintain up to about 200 with proper use.



This charger is not normally issued to TO&E units, but is an Ordnance shop item. However, your unit can get one if you show the need, and lots of vehicles in storage will establish the need.

Ask your Ordnance supply officer how to go about getting one. (Remember, this charger uses 220-volt, 3-phase, AC. Be sure you've got this kind of power at your battery shop.)



If you don't have enough vehicles to justify getting a big motor-generator charger, you can get one or more of the bulb-type rectifier chargers, (Stock No. 17-C-8740). It'll charge six 12-volt batteries at a time, or, the smaller one (Stock No. 17-C-8730) will charge three at a time.

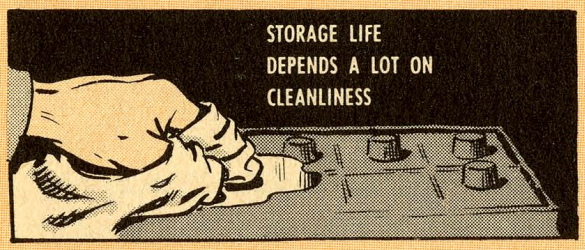
Of course, you **can** use the gasoline-driven battery charger which comes in your second-echelon equipment. But if you have to use this charger to keep up a bunch of batteries in storage for very long, it'll be worn out when you go into the field, and you'll be hurting. Besides, an electric charger is cheaper both to buy and to operate.

KEEP 'EM CHARGED

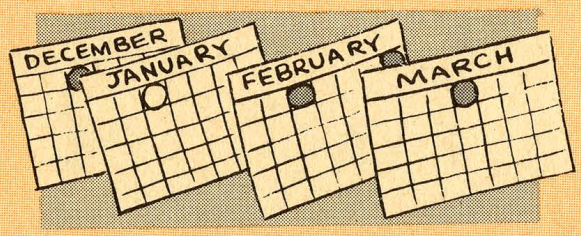
How often you need to charge your batteries will depend on two things, the temperature where they're stored, and how careful and clean you are about checking and filling them. Batteries will

discharge themselves when stored, and the rate at which they do is determined largely by the temperature. The cooler, the longer the charge lasts.

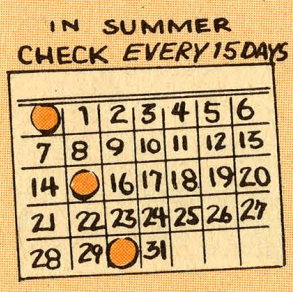
The other thing which affects the storage life of your battery is cleanliness. A battery with electrolyte spilled over the cell tops will have current leaking like crazy all the time, in storage or in a vehicle. So ya gotta be just as clean and careful when they're stored as when they're in your trucks.



Letting a battery run down and leaving it down will do it no good at all. So you have to keep checking 'em and charging 'em. In the summer check 'em with a hydrometer no less than once

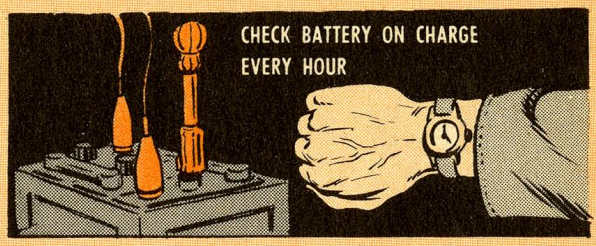


every 15 days, and in the winter, if your storeroom is not too hot, you can let 'em go as long as 30 days.



Whenever the gravity of a battery gets down to 1.240 (at 80°F) that battery should be charged. When recharging, charge until the cells are gassing freely, and until the specific gravity has stopped rising. (A good idea is to check the batteries on charge once every hour, and let them go two or three hours after the last rise in gravity.)

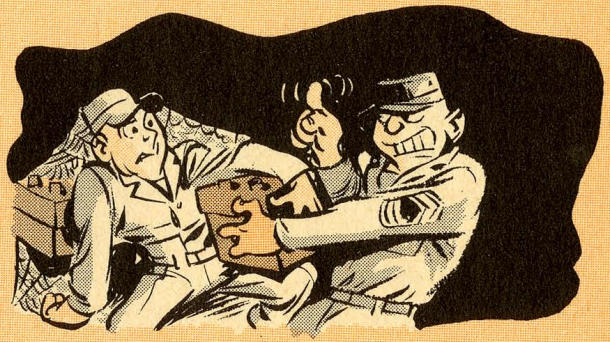
You have to be careful not to let the temperature of the electrolyte rise above 120 degrees during charging; 1.290 can



be regarded as fully charged. If, in this charging and checking, you find a battery with more than 25 gravity points difference between the cells after charging, that battery should be turned in for replacement. It's defective.

TURN 'EM IN

Now what if you just can't get battery chargers? That's rough, but it may happen. About the only thing you can do in such a case is to send your batteries back to your supporting Ordnance. You darn sure can't just store 'em—they'll eventually die—sulfate.

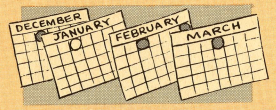


Some posts have taken in the batteries from stored vehicles on turn-in slips, and issued them out to active vehicles instead of new batteries. Then they draw a dry-charged battery to issue for the stored vehicle.

It takes about 15 hours on the charger to get the dry-charged batteries ready to use when needed. If your vehicles are

The other thing which affects the storage life of your battery is cleanliness. A battery with electrolyte spilled over the cell tops will have current leaking like crazy all the time, in storage or in a vehicle. So ya gotta be just as clean and careful when they're stored as when they're in your trucks.

Letting a battery run down and leaving it down will do it no good at all. So you have to keep checking 'em and charging 'em. In the summer check 'em with a hydrometer no less than once



every 15 days, and in the winter, if your storeroom is not too hot, you can let 'em go as long as 30 days.

Whenever the gravity of a battery gets down to 1.240 (at 80°F) that battery should be charged. When recharging, charge until the cells are gassing freely, and until the specific gravity has stopped rising. (A good idea is to check the batteries on charge once every hour, and let them go two or three hours after the last rise in gravity.)

You have to be careful not to let the temperature of the electrolyte rise above 120 degrees during charging; 1.290 can

be regarded as fully charged. If, in this charging and checking, you find a battery with more than 25 gravity points difference between the cells after charging, that battery should be turned in for replacement. It's defective.

TURN 'EM IN

Now what if you just can't get battery chargers? That's rough, but it may happen. About the only thing you can do in such a case is to send your batteries back to your supporting Ordnance. You darn sure can't just store 'em—they'll eventually die—sulfate.

Some posts have taken in the batteries from stored vehicles on turn-in slips, and issued them out to active vehicles instead of new batteries. Then they draw a dry-charged battery to issue for the stored vehicle.

It takes about 15 hours on the charger to get the dry-charged batteries ready to use when needed. If your vehicles are

not on immediate demand, this is your answer.

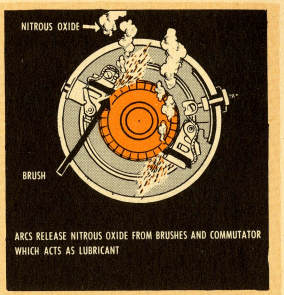
NOTE: *In extreme emergency, dry charged batteries* **can** *be activated without charging, but it is a doubtful stunt at best.*

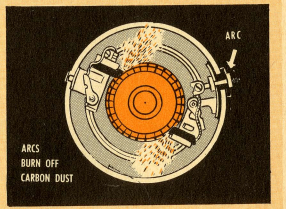
RUN-UP TIME

One other question always comes up where people have vehicles to store. That is the need for a battery in the vehicle, or connected to it, when making the monthly run-up of the stored vehicles. The problem generally comes from a shortage of manpower to install and remove the batteries.

Well, here's the scoop. A generator running under no load, or under as light a load as the ignition system of a vehicle, is in danger of glazing its commutator and brushes. It may overheat the commutator and sling solder. With a load on the generator such as the battery provides, the slight arcing which then takes place on the commutator prevents this.

This sounds crazy, to say that arcing is beneficial, but it's true. The theory is that the little arcs release a gas (nitrous oxide) from the brushes and commutator. This gas acts as a lubricant between the brush and the commutator. Enough of the carbon is always touching the copper to take off your current, but the film of gas does make the brushes last much longer. The arcs also keep the commutator cleaner by burning off the fine carbon dust.





So it is best to have a battery connected to the system whenever the engine's running. This can be done by making up a few battery carts with batteries and cables and trundling them up to the trucks to hook on while running them up.

not on immediate demand, this is your answer.

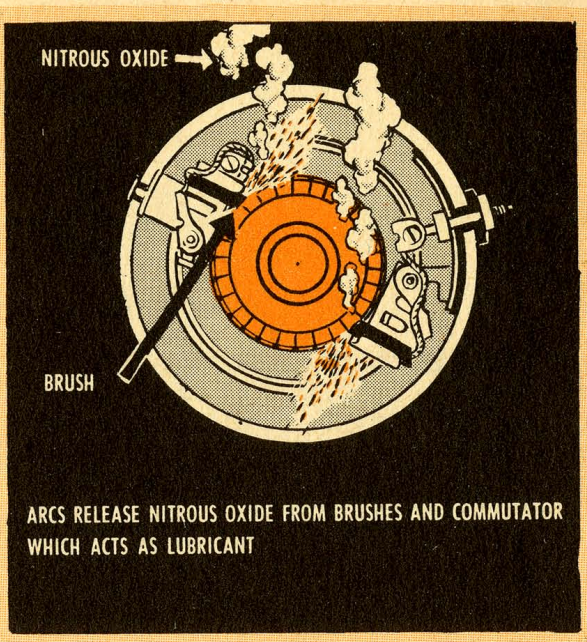
NOTE: *In extreme emergency, dry charged batteries* **can** *be activated without charging, but it is a doubtful stunt at best.*

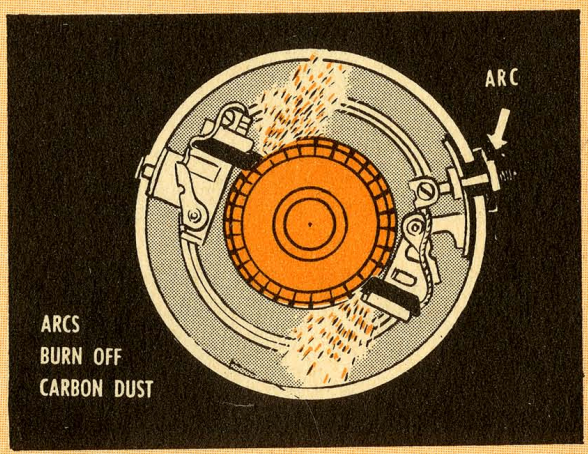
RUN-UP TIME

One other question always comes up where people have vehicles to store. That is the need for a battery in the vehicle, or connected to it, when making the monthly run-up of the stored vehicles. The problem generally comes from a shortage of manpower to install and remove the batteries.

Well, here's the scoop. A generator running under no load, or under as light a load as the ignition system of a vehicle, is in danger of glazing its commutator and brushes. It may overheat the commutator and sling solder. With a load on the generator such as the battery provides, the slight arcing which then takes place on the commutator prevents this.

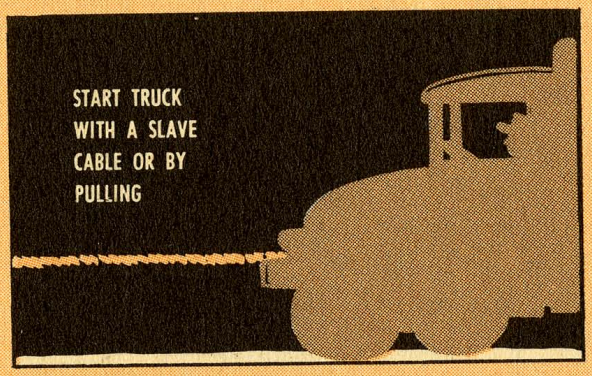
This sounds crazy, to say that arcing is beneficial, but it's true. The theory is that the little arcs release a gas (nitrous oxide) from the brushes and commutator. This gas acts as a lubricant between the brush and the commutator. Enough of the carbon is always touching the copper to take off your current, but the film of gas does make the brushes last much longer. The arcs also keep the commutator cleaner by burning off the fine carbon dust.

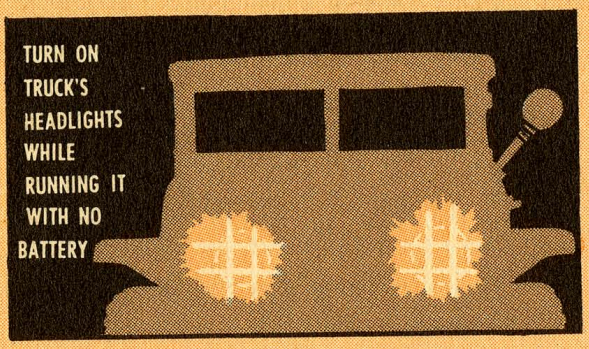


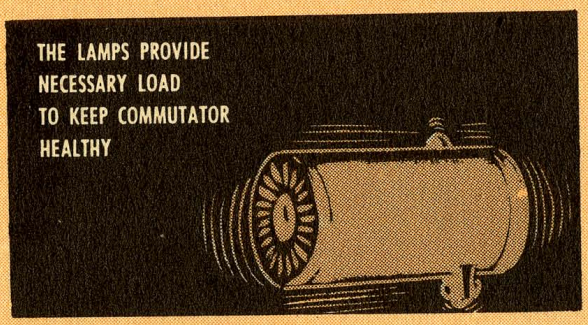


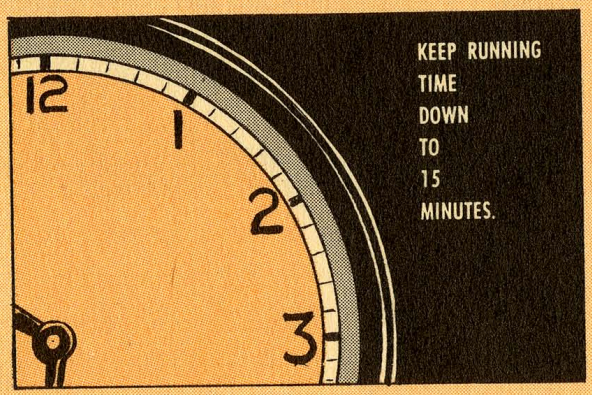
So it is best to have a battery connected to the system whenever the engine's running. This can be done by making up a few battery carts with batteries and cables and trundling them up to the trucks to hook on while running them up.

But, if you absolutely **can't** get the batteries, the carts, the men or the time to do this, you **can** run the truck without a battery



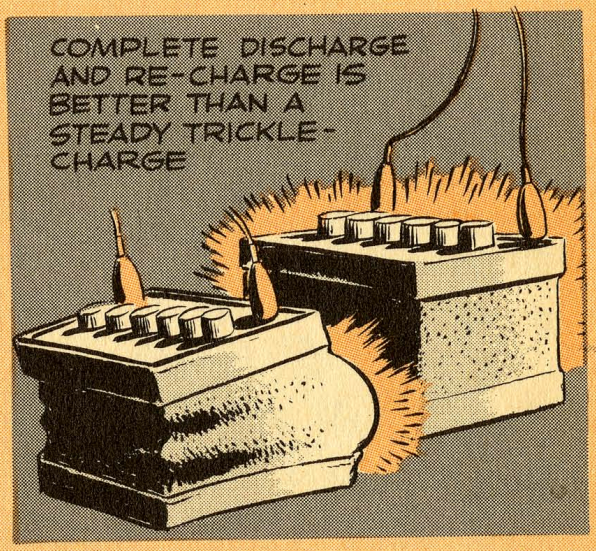




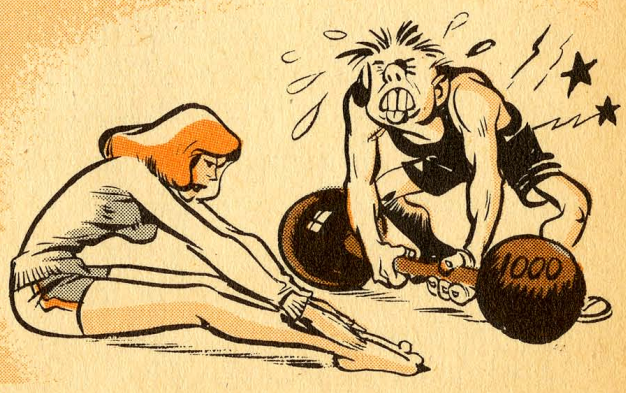


As you know, some service stations have trickle chargers with which they constantly charge new batteries they have for sale. Recent experience proves that it is better for a battery to be allowed to discharge, and then get recharged by approved slow-charging or constant-voltage methods than it is to keep a trickle charger on it all the time.

It seems that while the trickle charger will keep the gravity up, it permits the plates to harden, and does not necessarily affect more than a small portion of the total plate area in the battery. Strange as it seems, a trickle-charged battery can be discharged over most of its plates, and overcharged on a small portion of them at the same time.



Like with people, proper exercise is essential to good health.



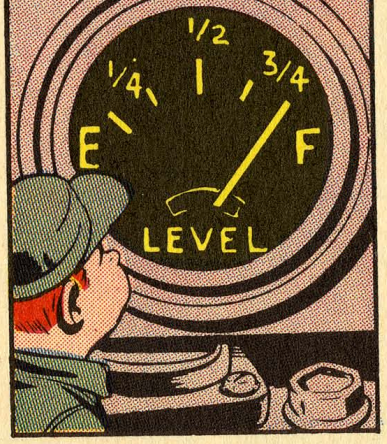
*T.S. TROUBLE SHOOTING

FOSGNOFF...YOU'RE THE CREW!! HERE'S WHAT YOU DO....FIRST GIVE IT A BEFORE-OPERATIONS GOING OVER....

FIRST- CHECK YOUR MASTER SWITCH AND YOUR WARNING LIGHTS

NOW, ARE YOUR FUEL VALVES OPEN ???

THEN, MAKE SURE YOU HAVE PLENTY OF GAS.

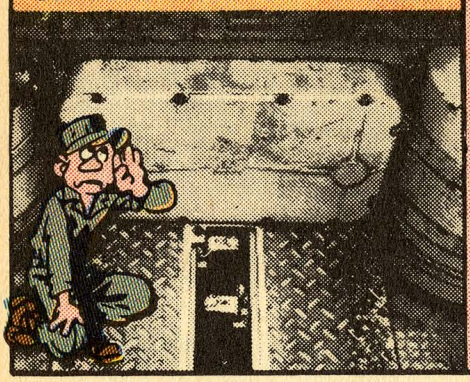


TAKE A LOOK AT YOUR DEGASSER... BE SURE IT'S NOT STUCK IN STOP POSITION...AND BY THE BY...IN COLD WEATHER YOUR ENGINE AND TRANS-MISSION SHOULD HAVE RIGHT WEIGHT OIL.

TRY TO CRANK ENGINE (BE SURE TRANSMISSION SHIFT LEVER'S IN PARK)... SHE'LL EITHER CRANK OR SHE WON'T..PERIOD!!! HAVE BOTH MAGNETOS OFF...

SUPPOSE THE ENGINE WON'T CRANK AND THE WARNING LIGHTS DIM OUT WHEN THE STARTER SWITCH IS CLOSED ...YOU MIGHT HAVE A LOW BATTERY OR LOOSE CABLES...TIGHTEN, START AUX-ILIARY ENGINE, AND TRY AGAIN.....

IF SHE **STILL** DOESN'T CRANK ...LISTEN FOR A CLICK OF THE STARTER RELAY... IF THE RELAY DOESN'T **CLICK**... LOOK FOR AN OPEN CIRCUIT IN THE **SHIFT LEVER MICROSWITCH**.....



STARTER RELAY... WHERE??

M-47

IN THE MASTER JUNCTION BOX

M-48

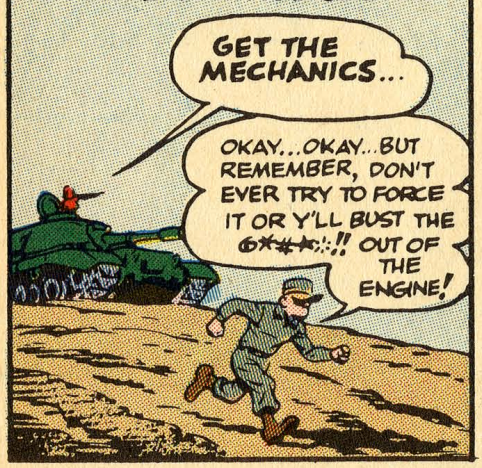
ON THE HULL FLOOR NEAR THE BATTERIES

M-41

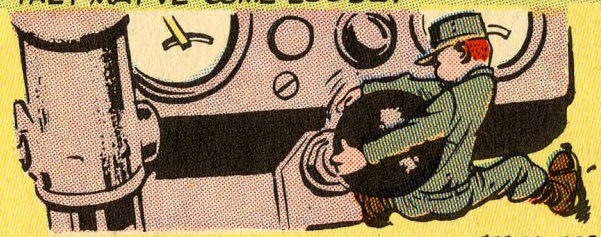
AT THE EXTREME REAR OF THE ENGINE COMPARTMENT

NOW SUPPOSE RELAY **CLICKS** BUT THE STARTER FAILS TO ENGAGE AGAIN... GIVE YOUR BATTERY AND STARTER CABLES AS WELL AS THE BULKHEAD CONNECTIONS, THE ONCE-OVER ....IF ALL THE VISIBLE CABLES ARE CLEAN AND TIGHT....AND THE STARTER FAILS TO RESPOND **G-E-T H-E-L-P!**

IF THE STARTER ENGAGES BUT CAN'T TURN THE ENGINE OVER YOU MAY HAVE **HYDROSTATIC LOCK** ...OR **MECHANICAL SEIZURE**

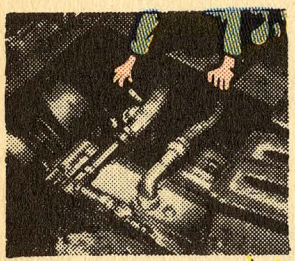


SUPPOSE THE ENGINE CRANKS BUT WON'T START? TRY THE **PRIMER PUMP**... IF IT WORKS OKAY, AND HAS 10 LBS PRESSURE ON INWARD STROKE, FUEL'S REACHING THE **PUMPS**... REGARDLESS OF **FUEL-VALVE CONTROLS** POSITION.... THEY MAY'VE COME LOOSE.



IF **PRIMER** FAILS TO PUMP GAS, **FUEL-VALVE CONTROLS** MAY BE BROKEN OR **FUEL LINES** CLOGGED OR **PRIME PUMP'S** DEFECTIVE. IF THE ENGINE FIRES AND RUNS WHEN Y'PRIME IT, BUT IT WON'T CONTINUE WHEN Y'STOP..... BETTER CHECK THE **FUEL PUMP**..... AND **FUEL FILTERS**....

WITH FUEL AND IGNITION ON...THE ENGINE CRANKS BUT NO FIRE???



1. REMOVE THE SECONDARY LEAD TO SPARK PLUG FROM THE IGNITION HARNESS, WHICH SERVES THE BOOSTED MAGNETO... FLYWHEEL SPARK PLUGS ON THE **M46, M47** AND **M48**... ACCESSORY PLUGS ON THE **M41**.

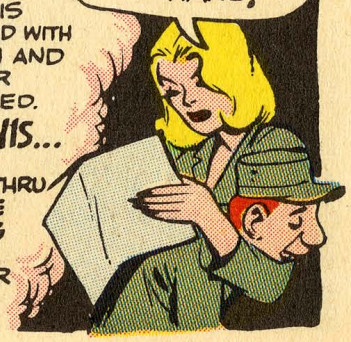
2.

HOLD LEAD ABOUT ¼ INCH OUT OF SOCKET

WEAR A GLOVE OR RAG

LISTEN FOR A SPARK WHEN THE ENGINE IS CRANKED WITH IGNITION AND BOOSTER SQUEEZED.

IF **ALL** THESE FAIL...GET THE UNIT MECHANIC .... NOW BEFORE I GO INTO **THAT**....HERE'S A *PINUP* TO HANG!

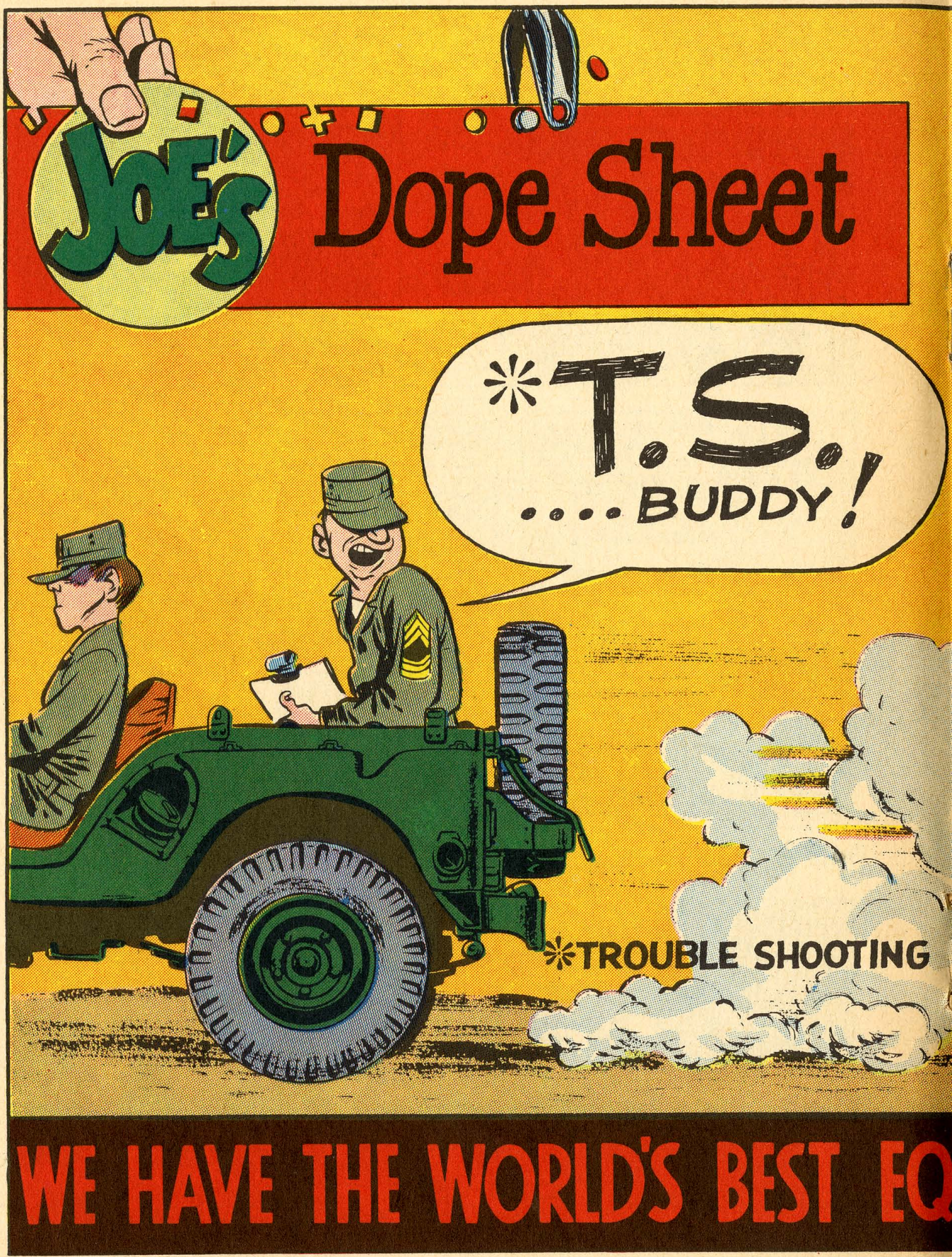


IF YOU GET A SPARK IN THE ABOVE TEST, THEN DO THIS...

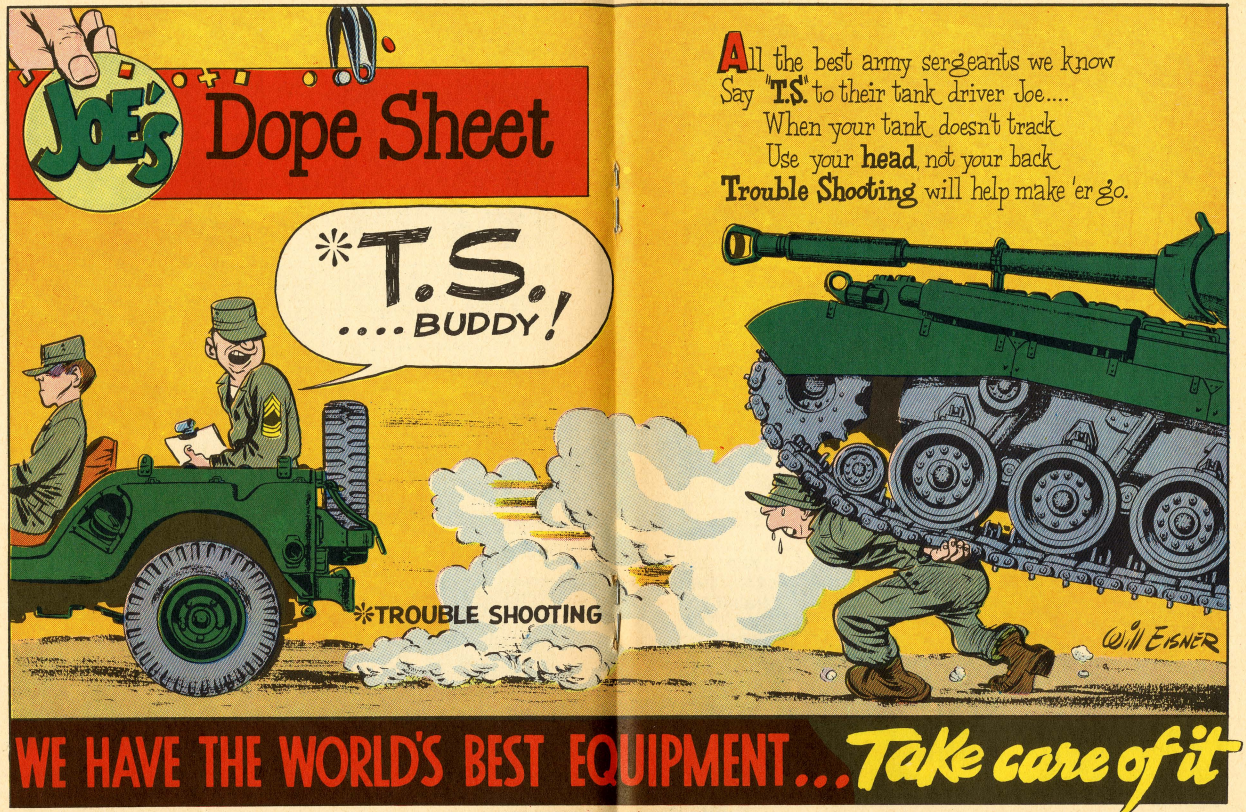
1 REMOVE **ONE** FUEL LINE FROM CARBURETOR....

2

IF **NO** FUEL'S COMIN' THRU AT THIS POINT... WHILE ENGINE'S **CRANKING** AND IGNITION'S **OFF** Y'GOT A **BAD** PUMP OR **CLOGGED** LINE.

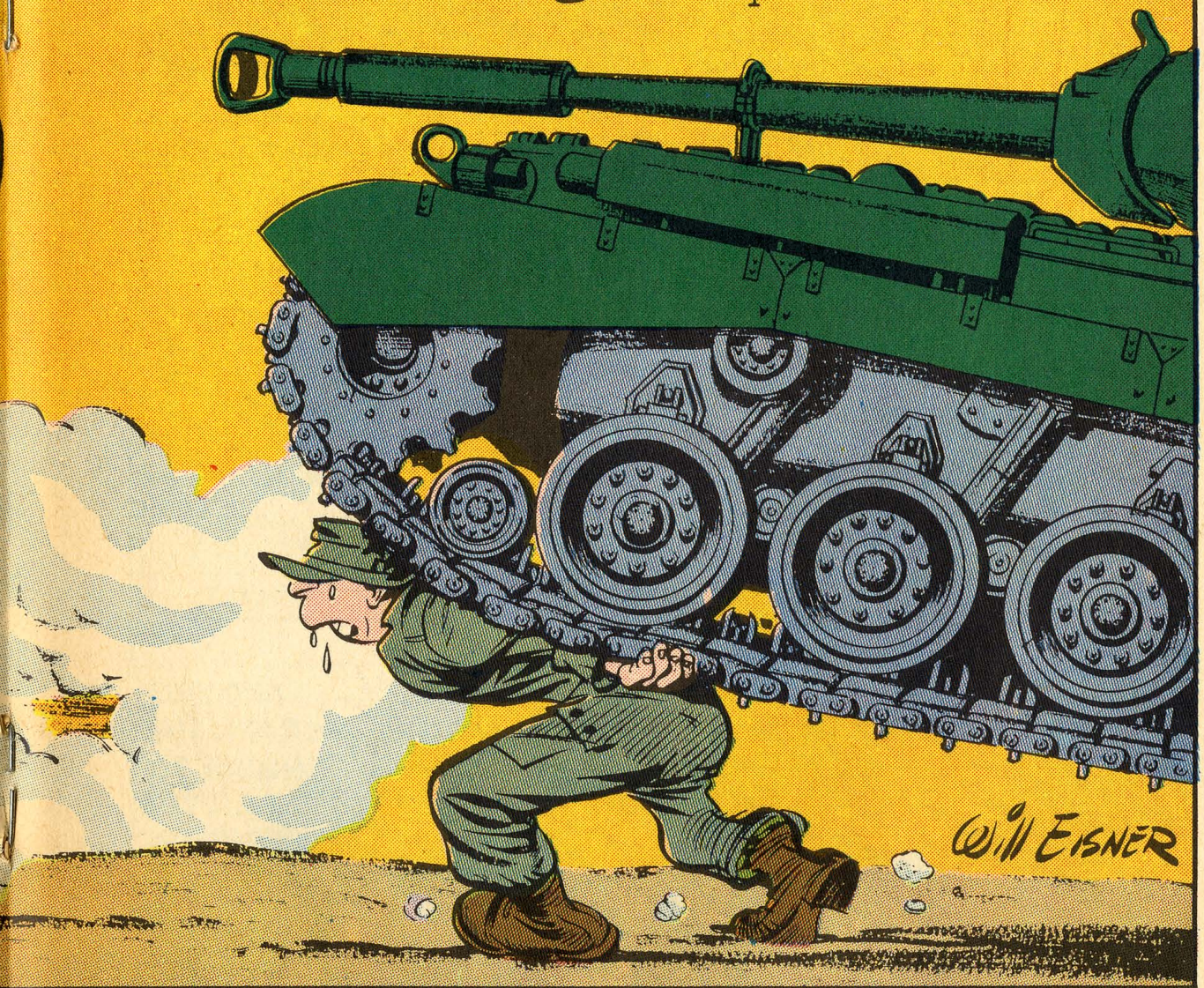


COPYRIGHT 1955



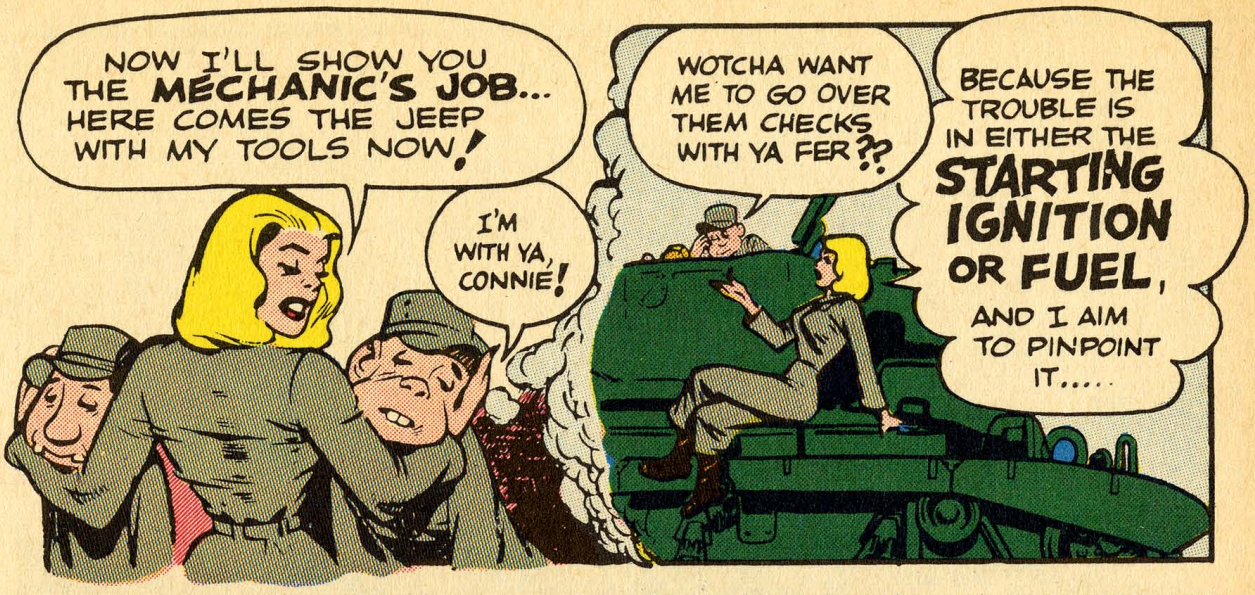
COPYRIGHT 1955 BY WILL EISNER

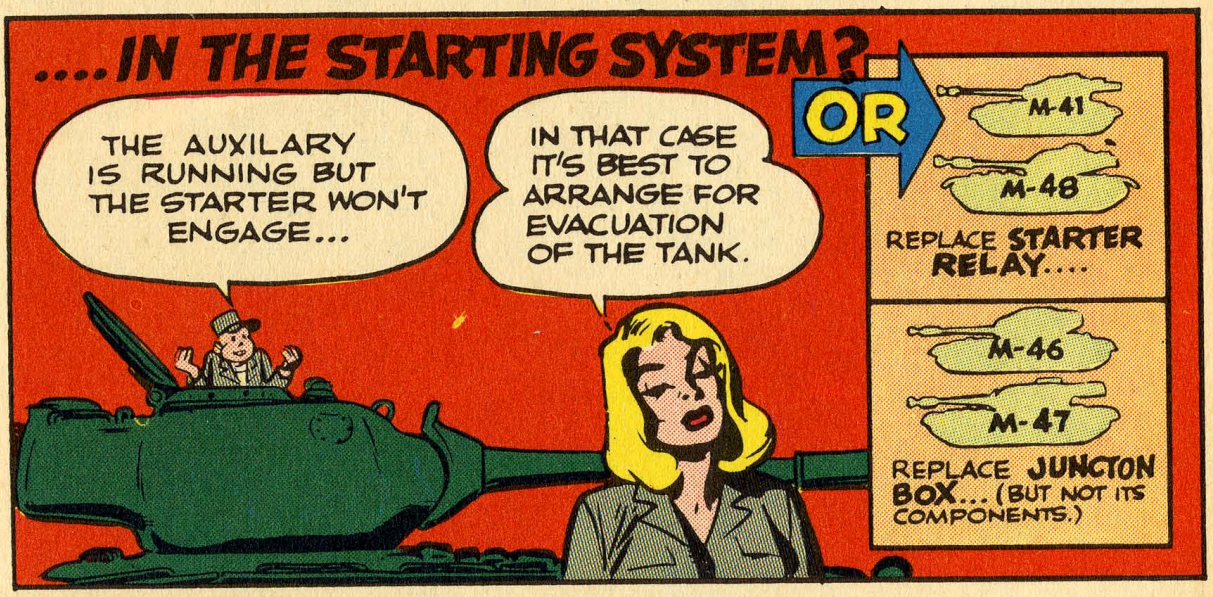
All the best army sergeants we know
Say "**T.S.**" to their tank driver Joe....
When your tank doesn't track
Use your **head**, not your back
Trouble Shooting will help make 'er go.

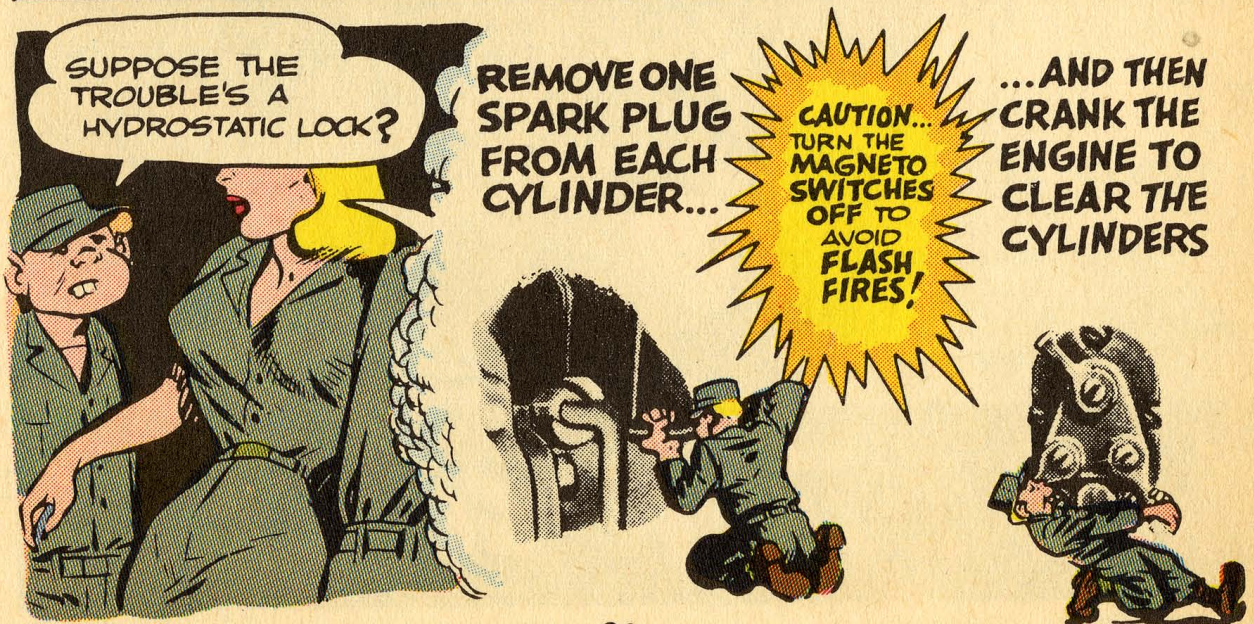


UIPMENT... Take care of it

5 BY WILL EISNER

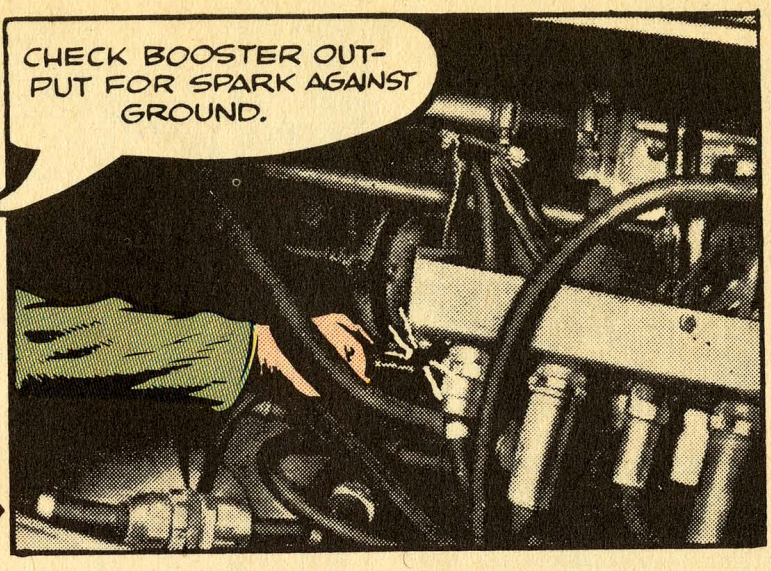

NOW I'LL SHOW YOU THE MECHANIC'S JOB... HERE COMES THE JEEP WITH MY TOOLS NOW!
I'M WITH YA, CONNIE!
WOTCHA WANT ME TO GO OVER THEM CHECKS WITH YA FER??
BECAUSE THE TROUBLE IS IN EITHER THE STARTING IGNITION OR FUEL, AND I AIM TO PINPOINT IT.....


....IN THE STARTING SYSTEM?
THE AUXILARY IS RUNNING BUT THE STARTER WON'T ENGAGE...
IN THAT CASE IT'S BEST TO ARRANGE FOR EVACUATION OF THE TANK.
OR
M-41
M-48
REPLACE STARTER RELAY....
M-46
M-47
REPLACE JUNCTON BOX... (BUT NOT ITS COMPONENTS.)


SUPPOSE THE TROUBLE'S A HYDROSTATIC LOCK?
REMOVE ONE SPARK PLUG FROM EACH CYLINDER...
CAUTION... TURN THE MAGNETO SWITCHES OFF TO AVOID FLASH FIRES!
...AND THEN CRANK THE ENGINE TO CLEAR THE CYLINDERS

IF YOUR **ENGINE CRANKS** BUT NO SPARKS EVIDENT AT THE BOOSTER SPARK PLUG HARNESS ...(WITH BOTH IGNITION AND BOOSTER SWITCHES CLOSED.)

DO THIS



IF THERE'S NO **OUTPUT**, CHECK **INPUT** LEAD WITH A TEST LAMP. **IF** CURRENT IS REACHING THE BOOSTER **INPUT** BUT IS NOT EVIDENT AT THE **OUTPUT** ...STICK IN A **NEW** BOOSTER COIL. **THIS** HAPPENS A **LOT**....

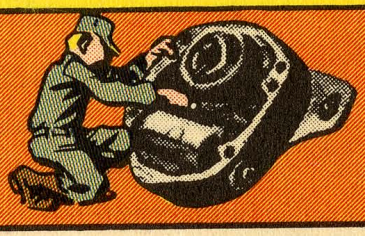
IF NO CURRENT IS EVIDENT AT THE **BOOSTER INPUT LEAD** WHEN THE **IGNITION** IS ON AND THE **BOOSTER SWITCH** IS CLOSED....CHECK BACK VIA THE **BULKHEAD CONNECTIONS** AND THE **IGNITION SWITCH** TO FIND THE **OPEN CIRCUIT**---REPLACE **SWITCH** OR **LEADS** AS NEEDED.....

IF YOU HAVE CURRENT AT BOOSTER OUTPUT...BUT NOT AT IGNITION HARNESS...

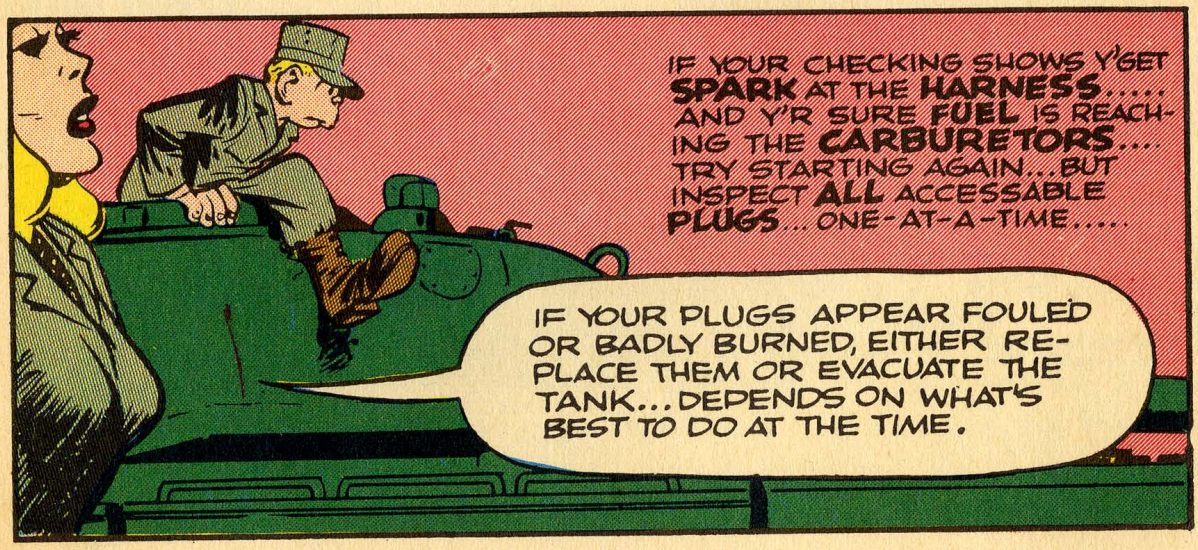
OR THIS

REMOVE THE **BOOSTER MAGNETO**... INBOARD (OR RIGHT) ON **M41** ...LOWER MAGS ON **M46, M47, M48.**

IGNITION BREAKER POINTS DIRTY??? ... CLEAN 'EM!!



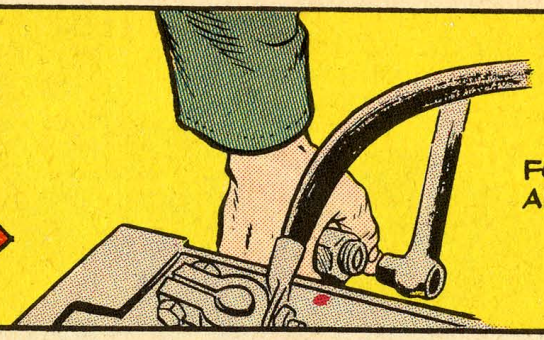
IF THIS **DOESN'T** DO THE TRICK, PUT IN **NEW MAGNETOS**...



IF YOU GET **SPARK** AT THE **HARNESS**, AND **FUEL** IS NOT REACHING THE **CARBURETORS**...

DO THIS

REMOVE FUEL LINES....



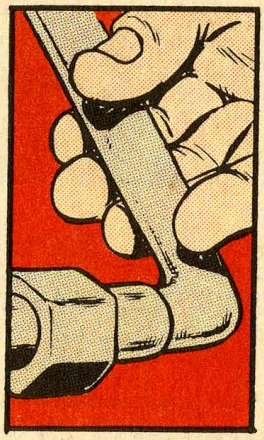
TEST PUMPS....

FOR VACUUM AND PRESSURE

IF THE FUEL PUMPS SHOW UP OKAY...

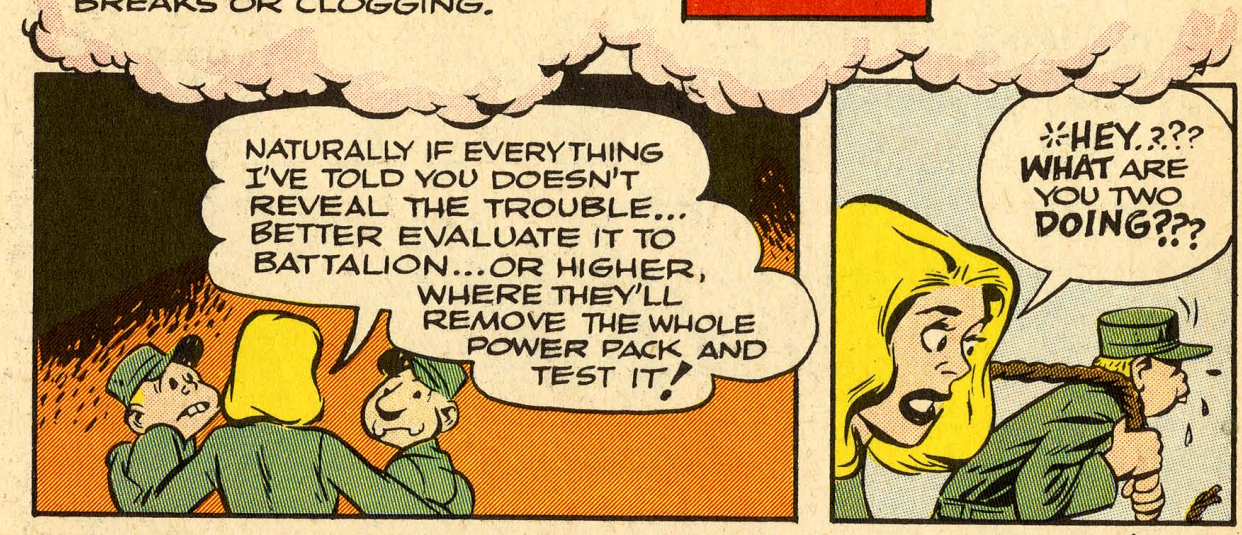
RECONNECT THE **FUEL PUMP INPUT LINE**....

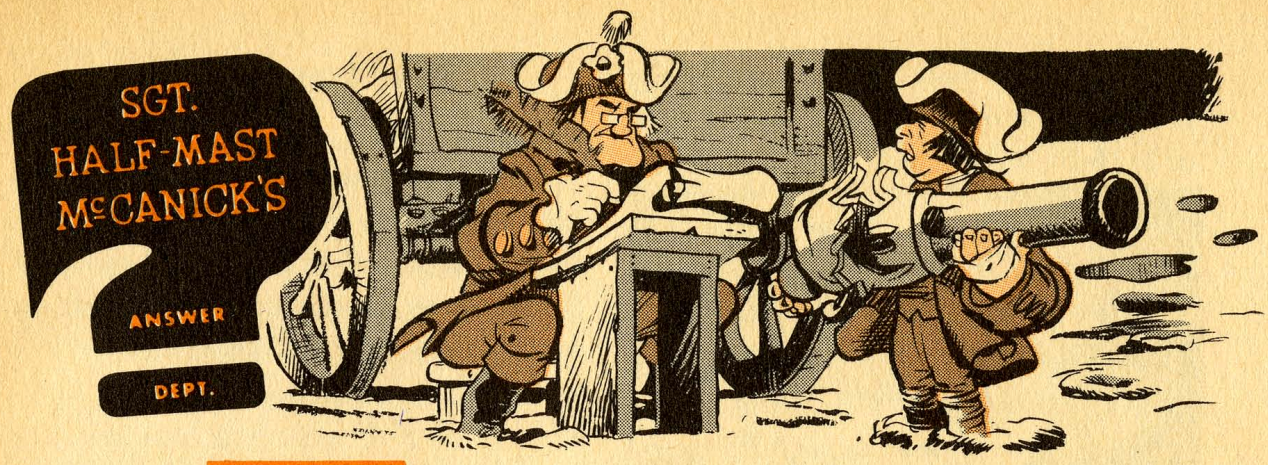
IF **FUEL** IS DELIVERED AT THE **FUEL PUMP OUTLET**...BUT FAILS TO REACH THE **CARBURETOR INPUTS**... CHECK THE **FUEL PUMP-TO-CARBURETOR LINES** FOR BREAKS OR CLOGGING.



NOW, SEE IF **FUEL** IS DELIVERED AT THE **OUT-PUT** SIDE OF THE FUEL PUMPS...

(...IF NOT, EVACUATE THE TANK FOR REMOVAL OF THE POWER PACK AND CHECKING OF FUEL PUMPS AND FUEL LINES...)





GEE — HAW

Dear Half-Mast,

Some of our drivers who have been doing night driving have asked how they can get directional signal lights for the vehicles that actually need them.

Can you give us the answer?

Cpl C. B. Q.

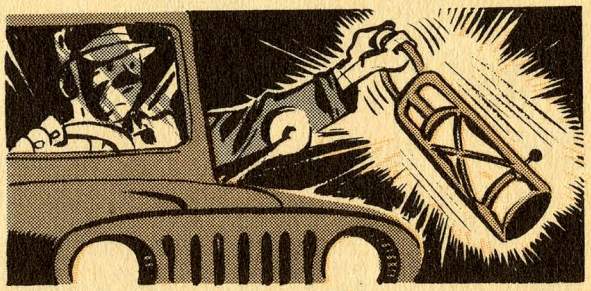
Dear Corporal C. B. Q.,

Looks like your directional signal lights for commercial-type vehicles will have to be secured by local purchase procurement funds—and that's where the rub comes in.

First of all, they'll be for commercial-type vehicles only. And you can't get any until you get the word from the commanding general of your army or command. SR 715-110-50 gives the general dope.

Now, for tactical-type vehicles, you're up a tree. You won't be able to use commercial directional lights 'cause hooking them up would ruin your waterproof electrical system.

There'll soon be MWO's covering directional signals for both tactical and commercial vehicles. But for now you'll have to use your trusty arm signals. Which are OK for daytime operation, but for night driving you need to be mighty careful. So, why not wait till the road is clear before making turns? Tap your brake pedal to flash your stoplight



to warn the man behind you to slow down so you can turn.

Half-Mast

PUT 'ER THERE

Dear Half-Mast,

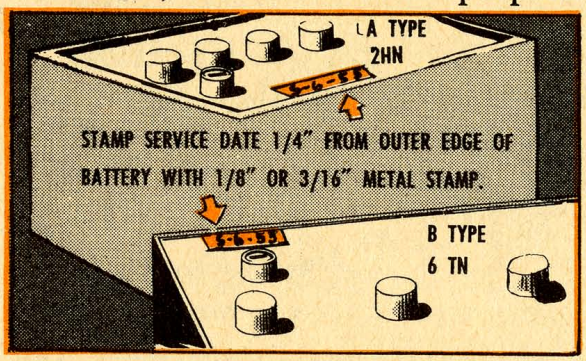
Could you give me the publication which states that vehicle storage batteries are to be date stamped when put in service?

WOJG N. O. O.

Dear Mr. N. O. O.,

SB 9-73 (25 April 46), paragraph 4, a and b, is what you are looking for. But you'd better bring it up to date with change No. 1 (14 Dec 54) which says 2HN and 6TN batteries will have the service date stamped into the battery case or cover adjacent to the negative

(—) terminal post as shown in figure 1. A metal stamp, character size 1/8-in or 3/16-in, will be used for this purpose.



Half-Mast

SB—SNAFU

Dear Half-Mast,

My SB 38-5-3 says MIL-0-5606 oil is available in screw-top cans, both in the quart and gallon sizes. Yet we can get nothing but the sealed cans. Also, the stock number listed in the SB for the quart size conflicts with the stock number in the SNL K-1.

Is there is or is there ain't any 5606 in screw-top cans that'll enable us to store left over oil safely?

SFC L. L. J.

Dear Sgt L. L. J.,

Forget what it says in the SB. It missed the cue on that recoil oil. Word has it that screw-top cans will be used in the future but there're none in supply now.

Like it says in PS 24, the thing to do is to requisition a potentiometer oil-filling can from SNL F-342. It's Ord Stock No. F342-7621224. Use it to keep your left-over oil clean.

Half-Mast

BEAT FOR BRUSHES

Dear Half-Mast,

The latest Ord 7 SNL G-262 arrived here t'other day and we were shocked to learn that the Brush, channel type for 90-mm guns, is not listed. We need 'em bad. Kindly help us Sarge. "Bitte!"

Lt. R. E. G.

Dear Lt R. E. G.,

Those new supply manuals sure will throw ya' if you don't watch 'em. If you have the latest Ord 7 SNL G-262 (August 1954) you'll find the Brush, channel type, (Federal Stock No. 6181983) listed on page 87. When ordering the brush use Ord Stock No. DO28-6181983. You shouldn't have any trouble rounding up a few to replace your old ones.

Half-Mast

SOME SHIFT

Dear Half-Mast,

What's wrong with the clutches in these M5A4 tractors? You can't shift 'em worth a tinker's darn.

Whoever recommended that thing didn't know his shift from sour apples.

MSgt H. B. C.

Dear Sgt H. B. C.,

Whoa now — steady, Boy!! There's nothing wrong with that new clutch in the M5 tractor. It's your old friend from the M4A3 tank, and you know it gave good service there.

Of course, nobody denies that it takes a **driver** to handle one of 'em. A 13-ton

tractor's not a child's toy, so keep kids out of it.

There's one angle to driving this machine which may give your boys some trouble until they know how it works. You've got a drive-shaft-brake which is applied when you shove the clutch pedal all the way down. That stops the drive-shaft and the transmission-input-gears and lets you shift into low or reverse when the tractor's standing still.

Once you're moving, you don't shove the clutch pedal quite all the way down, and of course you double-clutch. If the clutch is adjusted right, you won't have any trouble.

Here's your linkage adjustment: You pull the pin from the clutch-rod and adjust the clevis until you have 1-1/2-in free-travel.

The clutch finger-adjustment is measured with the clutch-assembly installed on the flywheel. The distance from the top of the pressure-plate-cover to the thrust-buttons must be 1-3/8-inches, and all of 'em must be the same to within .010-inch.

Also, you check the center drive-plate-screws. These should be turned clockwise until they bottom lightly, and then back 'em off four notches.

Thassal, and believe it, when the clutch is adjusted right, all you have to worry about is getting the driver checked out. The tractor will do its part.

Half-Mast

GROOVEY PISTON

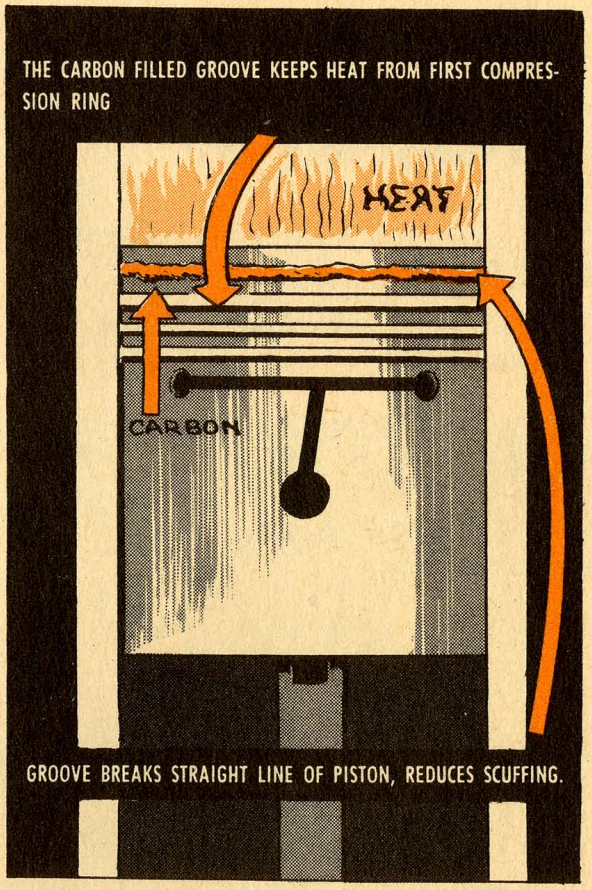
Dear Half-Mast,

What is the purpose of the groove above the top compression ring on the Jeep piston?

Cpl A. W. K.

Dear Cpl A. W. K.,

That groove is called a "heat dam". As it fills up with carbon it keeps some of the heat of combustion away from the first compression ring. This increases



the life of the fire ring. At the same time, by breaking the straight side of the piston, this groove tends to reduce the tendency to scuffing.

Half-Mast

CAGED SLICER

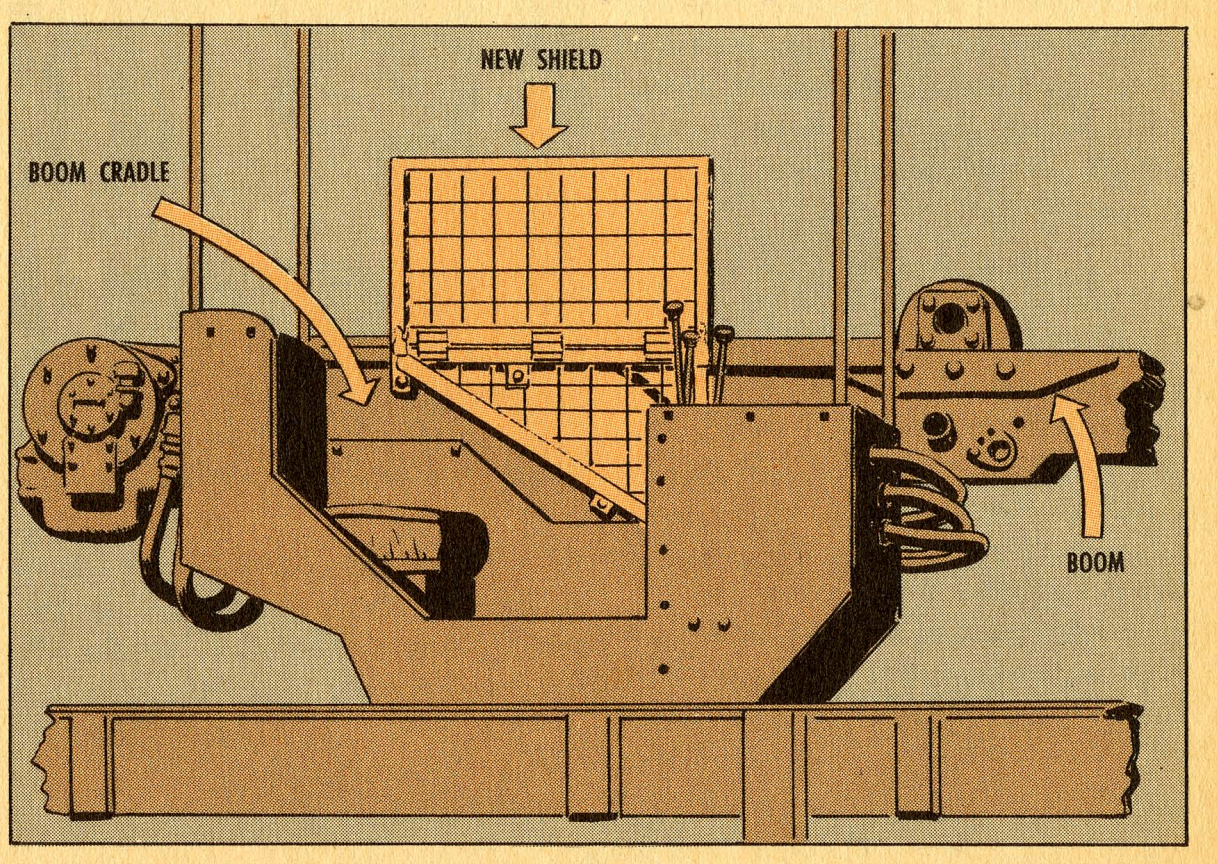
Dear Half-Mast,

I like our M62 wrecker's crane-operator (namely me). Ever since DA Circular 90, 1954, rescinded MWO G744-10, and did away with the safety shield, he could be dumb enough to rest his arm on the boom cradle when the boom's up. And forget to take it away when it gets lowered. Next thing you know, his right hand won't know what his left is doing. What do you suggest we do?

SFC H. B. W.
(The Crane-Operator)

Dear SFC H. B. W.,

Like the bar-maid said, "Keep your hand to yourself." There's a new MWO on its way with a better mouse trap. This new shield is a hinged affair that'll swing up and lock in place when the boom's in use and down when the boom is secured. This is to keep the shield from sticking out like a sore thumb when it's not needed. Speak to your Ordnance support unit about getting yours put on.



HERE'S A LIST OF ADDITIONAL OFFICIAL PUBLICATIONS ON ORDNANCE EQUIPMENT WHICH ARE OF INTEREST TO A LOT OF YOU.

SNL's

Ord 1 Intro, Feb 55

Ord 7 SNL B-47 Revlvr, ltwt cal. .38 spec, M13, Mar 55

Ord 8 SNL C-69 Gun, 90-mm, M3A2, Jan 55

Ord 9 SNL C-90 Launcher, rocket, mult, 4.5-in, M21, Jan 55

Ord 7 SNL D-24 Gun, 155-mm, M2 and M2A1; carr, gun, 155-mm, M1; platform, firing, 155-mm gun, M1, Jan 55

Ord 8 SNL D-24 Gun, 155-mm, M2 and M2A1; carr gun, 155-mm, M1; Limber, carr hvy, M5; platform, firing 155-mm gun, M1; mt, gun 155-mm, M13, Feb 55

Ord 9 SNL D-41 Sec 8 Mount, subcal, 75-mm, M20, Jan 55

Ord 7 SNL D-65 Launcher, 762-mm rocket, trk mtd, XM289, Jan 55

Ord 9 SNL F-205 Vol 4 Light instru, M19, M31, M34, M35, M37, M38, M47, 6578454, 7983714, Feb 55

Ord 9 SNL F-207 Vol 7 System, remote cntrl, M6A2, Feb 55

Ord 8 SNL F-315 Sec 2 System, local cntrl, M16A1E1, Feb 55

Ord 9 SNL F-361 Sight, M40 (T149E2), Feb 55

Ord 9 SNL F-374 Telescope, T150E1, Jan 55

Ord 9 SNL G-249 Vol 6 Winteriz equip—winteriz kit for trk, 2-1/2-ton, 6x6 (GMC models CCKW-352 and 353, SNL G-508): Artry repair, M9A1; bomb serv, M27; cargo, LWB; cargo, SWB; dump; elec repr, M18A2; instr repair, M10A1; mach shop, load A, M16A2; Sig Corps gen'l repr, M30; small arms repr, M7A2, Jan 55

Ord 8 SNL G-249 Vol 9 Winteriz equip for trk, util, 1/4-ton, 4x4, M38 (SNL G-740), Jan 55

Ord 8 SNL G-249 Vol 10 Winteriz equip for trk, 3/4-ton, 4x4, M37 series (SNL G-741), Jan 55

Ord 8 SNL G-249 Vol 13 Winteriz equip for trk, 2-1/2-ton 6x6, M135 series (SNL G-749), Feb 55

Ord 8 SNL G-249 Vol 21 Winteriz equip for trk, 5-ton, 6x6, M41 series (SNL G-744), Jan 55

Ord 8 SNL G-249 Vol 42 Winteriz equip for carrier, cargo, amphib, M76 (T46E1) (SNL G-245), Feb 55

Ord 8 SNL G-249 Vol 51 Winteriz equip for shltr, personnel for trk, cargo, 3/4-ton, 4x4, M37 (SNL G-741), Feb 55

Ord 8 SNL G-254 Tank, 90-mm gun, M48 (T48), Jan 55

Ord 9 SNL G-742 Trk, cargo, 2-1/2-ton, 6x6, M34; trk, cargo, 2-1/2-ton, 6x6, M35; chass, trk, 2-1/2-ton, 6x6, M44; chass, trk, 2-1/2-ton, 6x6, M45; chass, trk, 2-1/2-ton, 6x6, M46; trk, dump, 2-1/2-ton, 6x6, M47; trk trctr, 2-1/2-ton, 6x6, M48; trk, tank, gas, 2-1/2-ton, 6x6, 1200-gal, M49; trk, tank, wtr, 2-1/2-ton, 6x6, 1000-gal, M50; trk, dump, 2-1/2-ton, 6x6, M59; trk, wrckr, crane, 2-1/2-ton, 6x6, M108; trk, van, shop, 2-1/2-ton, 6x6, M190; trk trctr, 2-1/2-ton, 6x6, M275; trk, telephone const and maint, 2-1/2-ton, 6x6, V17A/MTQ (Sig Corps); trk, earth boring mach and pole sttr, 2-1/2-ton, 6x6, V18A/MTQ (Sig Corps), Jan 55

Ord 7-8 SNL G-797 Semitrlr, low bed, 25-ton, 4-whl (M172), Jan 55

Ord 6 SNL J-8 Sec 13 Shop sets, maint (fld), auto, Jan 55

Ord 6 SNL J-14 Spcl tool sets for AA weapons (SNL Grps A and D), Jan 55

Ord 7-8 SNL J-160 Clnr, stm, pressure jet; 110 V, 60 C, sgle-ph, 275 gal cap (Clayton Mod QM-120) (40-C-1008-10), Jan 55

Ord 7-8 SNL J-299 Drill, elec, port, 115 V, univ current, hv-duty 1/4 in cap (Skilsaw, mod 43) (40-D-341), Feb 55

Ord 7-8 SNL J-498 Drill, elec, port, 115 V, univ-current, hv-duty, 3/4 in cap (Albertson No. 1560-ES-212) (40-D-346) and drill, elec, port, 115 V, univ current, hv-duty, w/vert stnd, 3/4 in cap (Albertson No. 1560-ES-212) (40-D-357), Feb 55

Ord 7-8 SNL J-533 Grinder, elec: 1/5 hp, 115 v, univ current, w/fused ovrld protctr (Precise Products models 40 and super 40) (40-G-109-85), Jan 55

Ord 7-8 SNL J-772 Hammer, pneu, chipping, 1-1/8-in bore, 4 in stroke (Thor Pwr Tool No. 44) (40-H-271), Feb 55

Ord 3 SNL R-7 Land mines and comp: demoltn explosives and rel items; and ammo for simulated artllry, booby trap, and land mine fire, Jan 55

Ord 3 SNL S-2 Fuzes and misc explosive comp for arcrft bombs, Jan 55

Ord 3 SNL S-4 Grenades, hand and rifle, and rel comp, Jan 55

TECHNICAL MANUALS

9-1870-1 Care and maint of pneu tires, Feb 55

9-3061 Trk-mtd 762-mm rckt launcher XM289, Jan 55

9-3066 762-mm rckt Trlr XM 329, Dec 54

9-6055 Periscope mts M88, M89, M93 (T176E1) T176E2, and M94 (T177E2), Jan 55

9-6081-9 Fire cont sys T38; repr and rebld of cable sys T31E1; wiring set T5E1; target slctr T1E2; and sighting sys T34E1, Jan 55

9-6103 Telescope mnts M3A1, M18A1, M21A1, M25, M30, M44, M44A1, M69 and M76, Dec 54

9-9026-1 Universal-current 115-v 1/5 hp, elec grndr w/fused o load protctr (Precise Prod Mod super 40) (40-G-109-85), Jan 55

9-9028-1 and TO 34F2-2-1-111 Universal-current 115-v 1/4 hp, tool post Grndr (Dumore Mod 8160 Series 44) (40-G-165) universal-current 115-v 1/3 hp tool post grndr (Dumore Mod 8164 ser 48) (40-G-165-30), Feb 55

ORDNANCE MWO's

B42-W2 (F) 3.5-in rckt launchers M20 and M20B1: instg new contactor latch gp assy and providing bore sghtng notches, Mar 55

F210-W3 (D) Binoculars M3, M8, M9, M13, M13A1 and crryng case M17: camouflage by pntg surfaces w/olive drab paint, Feb 55

F235-W14 (F) Periscope M19: Adapt periscope to redesigned tank rotor plate, Feb 55

G260-W17 (F) Tracked armored inf veh M75 (T18E1): installation of infrared driving comp, Jan 55

TECHNICAL BULLETINS

9-3026-1 (O) 75-mm AA gun mt T69: lubing hyd lifting mechanism chains w/gun mt emplaced, Feb 55

9-7009-6-1 (F) Cross-drive transmssn Mod CD-850-4, -4A, and -4B (Allison-GM): Intron of Model CD-850-4B transmssn, Mar 55

9-7205-2-2 (F & D) Components of elev and trav systems for self-proplld 155-mm howitzer M44 (T194), Feb 55

ORD 593 (O) Towed fld artllry carriages and carriage trnspt wagon M3A1: Use of 24/6 v blackout light adapt assy 7356624, Feb 55

MISCELLANEOUS

SB 9-114 (D) Waterproof wrist watch case assy: Prep for issue, Mar 55

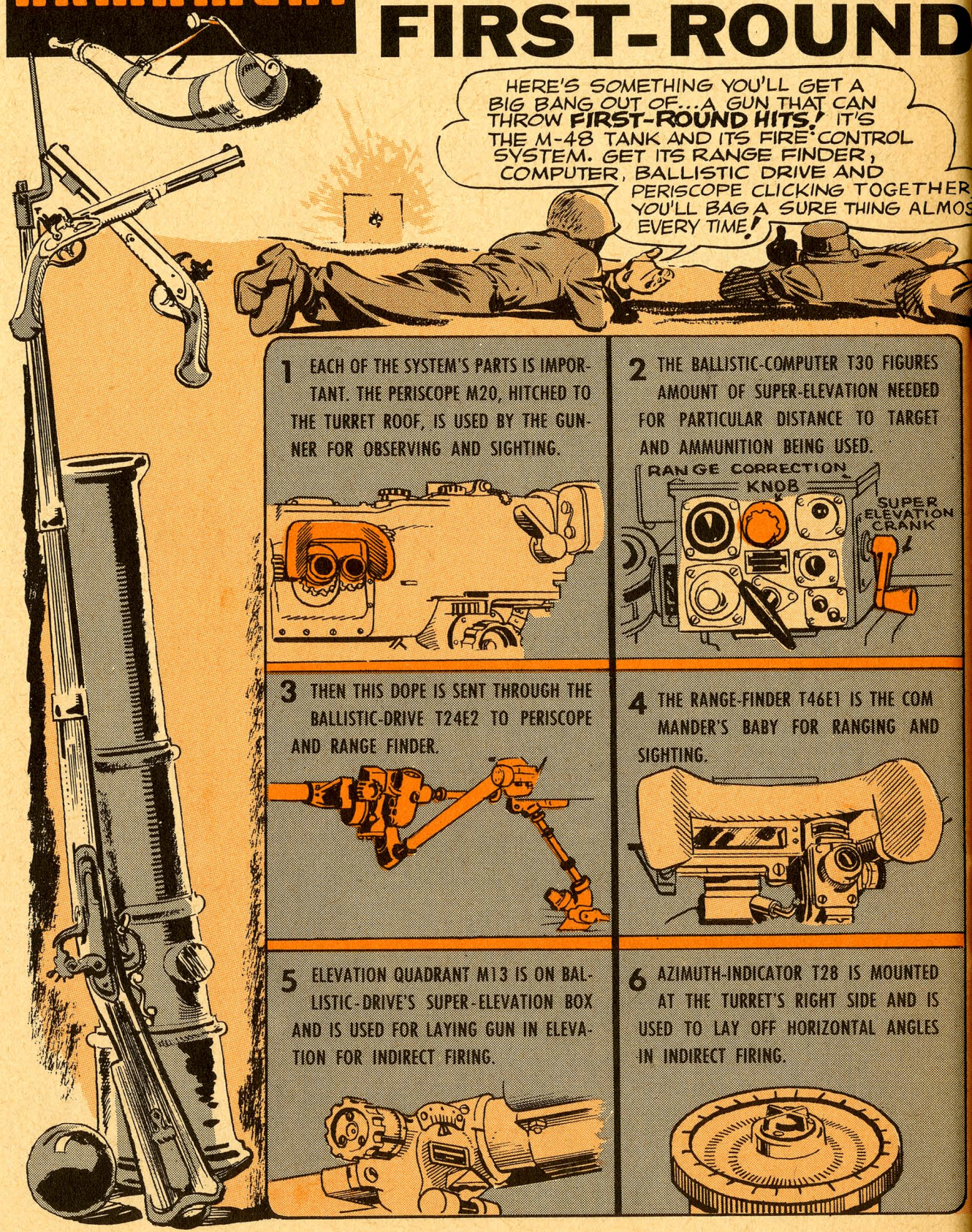
LO 9-8030 Truck, 3/4-ton, 4x4, M37, M42, M43, V-41 ( )/GT, Dec 53

FT 4.2-F-1 Mortar, 4.2-in, M30 firing shell, HE, M329 and M329B1; shell, HE, M3A1; shell, HE, M3 and M3 alt; shell, chem, M2A1 (WP, FS, HD); shell, chem, M2 and M2 alt (WP, FS, FM, H, HT, HD, CG) charge, propel, M36; charge, propel, M6, Dec 54

ARMAMENT

Spruce up—Make a Hit With Your Team...

FIRST-ROUND

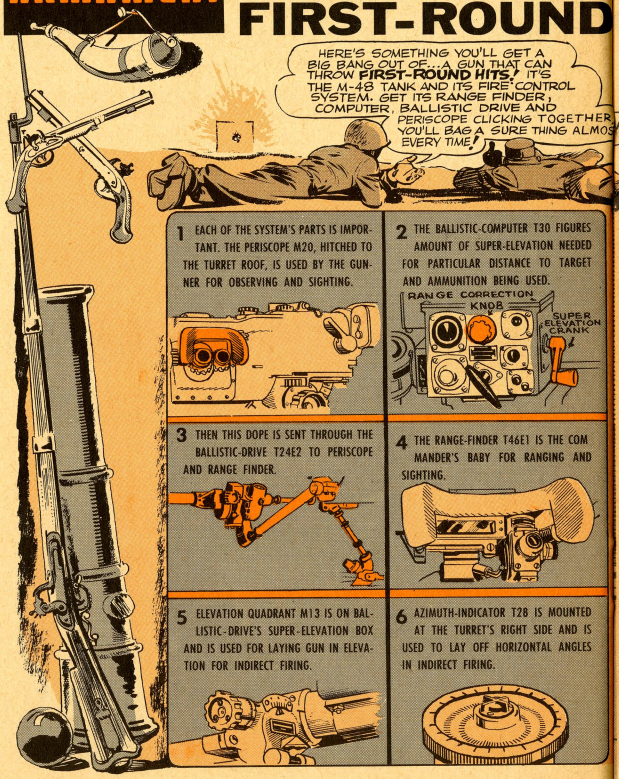


ARMAMENT

Spruce up—Make a Hit With Your Team...

FIRST-ROUND KNOCK-OUT

Is what you'll get, when your M48 tanks fire-control set-up is on-the-ball...



THE JOB OF RUNNING THE SYSTEM IS DONE BY THE—

SINCE YOU NEVER KNOW WHAT'S COMING, EVERY MEMBER OF THE TEAM OUGHT TO KNOW EACH OTHER'S JOB AS WELL AS HIS OWN.

ONE...TWO...THREE

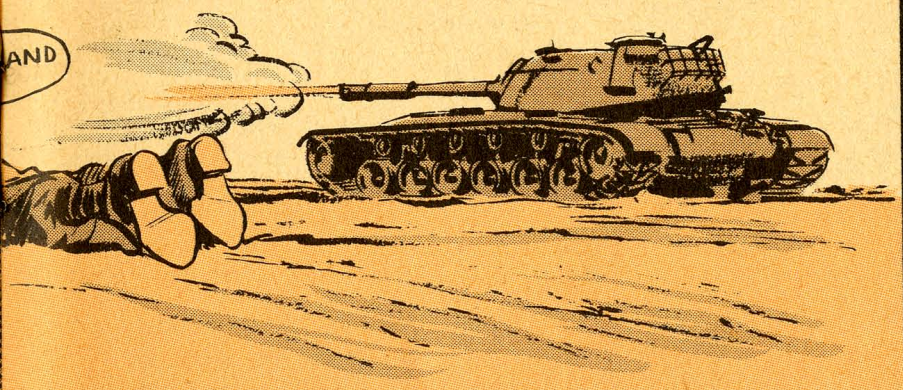
Once the crew and system are set for action, this is how the team usually works. First the commander announces the type of ammunition to be used. The commander then calls out the target and gets its distance with the range-finder. In ranging-on with the range-finder, that instrument automatically sends the range dope to the computer.

When the gunner hears the type of ammo being used, he manually "sets-in" this information into the computer. Having all the necessary dope, the computer figures out the super-elevation and sends this data via the ballistic-drive into the lines of sight of both the gunner's periscope and the commander's range-finder when the gunner pushes the reset button or the commander flips his computer-control switch.

At the same time the gunner elevates the gun tube and places the periscope aiming-cross on the target. Then she's ready to fire.

KNOCK-OUT

Is what you'll get, when your M48 tanks fire-control set-up is on-the-ball...



THE JOB OF RUNNING THE SYSTEM IS DONE BY THE—

COMMANDER

GUNNER**

LOADER

SINCE YOU NEVER KNOW WHAT'S COMING, EVERY MEMBER OF THE TEAM OUGHT TO KNOW EACH OTHER'S JOB AS WELL AS HIS OWN.

ONE...TWO...THREE

Once the crew and system are set for action, this is how the team usually works. First the commander announces the type of ammunition to be used. The commander then calls out the target and gets its distance with the range-finder. In ranging-on with the range-finder, that instrument automatically sends the range dope to the computer.

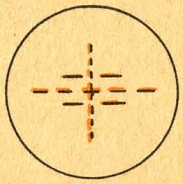
When the gunner hears the type of ammo being used, he manually "sets-in" this information into the computer. Having all the necessary dope, the computer figures out the super-elevation and sends this data via the ballistic-drive into the lines of sight of both the gunner's periscope and the commander's range-finder when the gunner pushes the reset button or the commander flips his computer-control switch.

At the same time the gunner elevates the gun tube and places the periscope aiming-cross on the target. Then she's ready to fire.

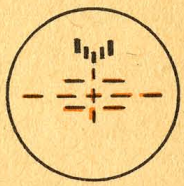
ALWAYS CHECK YOUR FIRE CONTROL EQUIPMENT BEFORE GOING INTO ACTION. TRY THESE FOR SIZE!

GET READY

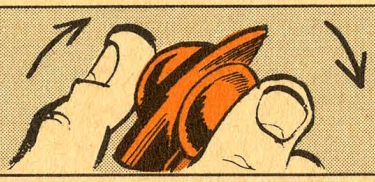
FOR NORMAL OPERATION SET THE STEREO SWITCH ON THE RANGE-FINDER SWITCH-PANEL TO THE STEREO-POSITION YOU SHOULD SEE THE SIGHTING RETICLE IN THE LEFT EYEPIECE.



AND THE STEREO PATTERN SHOULD BE IN BOTH RIGHT AND LEFT EYEPIECES.

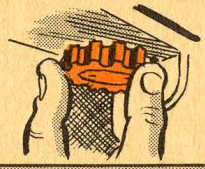


ROTATE THE RHEOSTAT KNOB TO INCREASE OR DECREASE THE BRIGHTNESS OF PATTERNS.

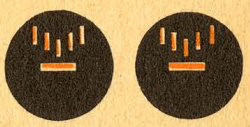


IF IT DOESN'T— YOU NEED A NEW RHEOSTAT. CALL ORDNANCE

NOW TURN HALVING-KNOB. THIS'LL GET YOU AN UP-AND-DOWN MOVEMENT OF THE STEREO PATTERN IN THE RIGHT EYEPIECE.

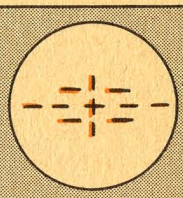


IT'S TO ALINE "VERTICALLY" THE STEREO-RETICLES OF BOTH EYEPIECES.



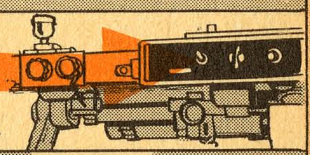
WITH THE LIGHTING-SWITCH SET TO AUXILIARY-GUNSIGHT, YOU SHOULD SEE THE AUXILIARY-SIGHTING-RETICLE IN RIGHT EYEPIECE.

AND THE STEREO PATTERN IS GONE FROM BOTH EYEPIECES.

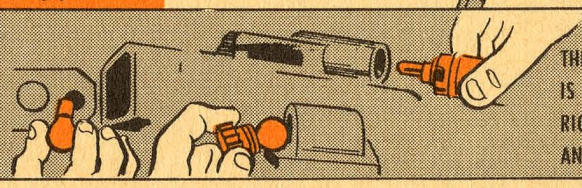


CHECK THE RANGE-SCALE LIGHT TO SEE IF IT WORKS.

ITS SWITCH IS ON THE SAME PANEL AS THE STEREO SWITCH.



IF ANY OF THE PATTERNS YOU SHOULD HAVE WON'T SHOW— YOU PROBABLY NEED A NEW BULB. HERE'S WHERE TO REPLACE THEM.



NOTICE THAT THE LEFT STEREO IS LIT BY THE RIGHT STEREO LAMP AND VICE VERSA.

BEFORE YOU REPLACE ANY BULBS OR ELECTRICAL PARTS, BE SURE YOU TURN OFF THE APPROPRIATE SWITCH ON THE SWITCH PANEL.

OR YOU'LL PROBABLY BURN OUT THE RESISTORS IN THE SWITCH PANEL. THERE SHOULD BE A DECAL ON THE LATEST RANGE FINDERS ABOUT THIS.

If you find any of your fire-control units are out of whack . . . call Ordnance. And speaking of that, if any part of the fire-control system isn't working right—don't throw up your hands. It may need only a little repair job to give you what you want. Tell Ordnance about it.

ALWAYS CHECK YOUR FIRE CONTROL EQUIPMENT BEFORE GOING INTO ACTION. TRY THESE FOR SIZE.

GET READY

FOR NORMAL OPERATION SET THE STEREO SWITCH ON THE RANGE-FINDER SWITCH-PANEL TO THE STEREO-POSITION YOU SHOULD SEE THE SIGHTING RETICLE IN THE LEFT EYEPIECE.

AND THE STEREO PATTERN SHOULD BE IN BOTH RIGHT AND LEFT EYEPIECES.

ROTATE THE RHEOSTAT KNOB TO INCREASE OR DECREASE THE BRIGHTNESS OF PATTERNS.

IF IT DOESN'T— YOU NEED A NEW RHEOSTAT. CALL ORDNANCE

NOW TURN HALVING-KNOB. THIS'LL GET YOU AN UP-AND-DOWN MOVEMENT OF THE STEREO PATTERN IN THE RIGHT EYEPIECE.

IT'S TO ALINE "VERTICALLY" THE STEREO-RETICLES OF BOTH EYEPIECES.

WITH THE LIGHTING-SWITCH SET TO AUXILIARY-GUNSIGHT, YOU SHOULD SEE THE AUXILIARY-SIGHTING-RETICLE IN RIGHT EYEPIECE.

ON OFF ON LIGHT

AND THE STEREO PATTERN IS GONE FROM BOTH EYEPIECES.

CHECK THE RANGE-SCALE LIGHT TO SEE IF IT WORKS.

ITS SWITCH IS ON THE SAME PANEL AS THE STEREO SWITCH.

IF ANY OF THE PATTERNS YOU SHOULD HAVE WON'T SHOW— YOU PROBABLY NEED A NEW BULB. HERE'S WHERE TO REPLACE THEM.

NOTICE THAT THE LEFT STEREO IS LIT BY THE RIGHT STEREO LAMP AND VICE VERSA.

BEFORE YOU REPLACE ANY BULBS OR ELECTRICAL PARTS, BE SURE YOU TURN OFF THE APPROPRIATE SWITCH ON THE SWITCH PANEL.

OFF OFF

OR YOU'LL PROBABLY BURN OUT THE RESISTORS IN THE SWITCH PANEL. THERE SHOULD BE A DECAL ON THE LATEST RANGE FINDERS ABOUT THIS.

If you find any of your fire-control units are out of whack . . . call Ordnance. And speaking of that, if any part of the fire-control system isn't working right—don't throw up your hands. It may need only a little repair job to give you what you want. Tell Ordnance about it.

THE WAY THE COMMANDER HANDLES THE RANGE FINDER'S GOT A LOT TO DO WITH GETTING THOSE FIRST ROUND HITS; THAT INSTRUMENT'S BOTH HIS SIGHT AND HIS TOOL FOR GETTING THE RANGE FOR THE 90-MM GUN.

GET SET

THE MAN WHO'S GOING TO DO THE LOOKING SHOULD FIRST SET IN HIS OWN INTERPUPILLARY SETTING (SPACE BETWEEN THE EYES) AND DIOPTER SETTING (FOCUS ADJUSTMENTS). (IF YOU'RE ON-THE-BALL, YOU HAVE YOUR OWN SETTINGS JOTTED DOWN SOME PLACE FOR YOUR OWN INFO.)

SINCE EACH MAN'S EYES WORK DIFFERENTLY, YOU'VE GOT TO ADJUST THE SIGHT FOR THE DIFFERENCES. THE GUNNER PUTS HIS DIOPTER SETTING IN HIS PERISCOPE.

STEREO SWITCH

ON OFF LIGHT ON

TURN THE RANGE FINDER'S STEREO-SWITCH UP TO STEREO-POSITION, AND PUT SOME LIGHT ON THE SUBJECT BY TURNING UP ITS RHEOSTAT UNTIL YOU SEE THE STEREO-RETICLE NICE AND CLEAR.

WITH THE HALVING-KNOB, PUT THE LEFT AND RIGHT STEREO PATTERNS ON THE SAME LEVEL.

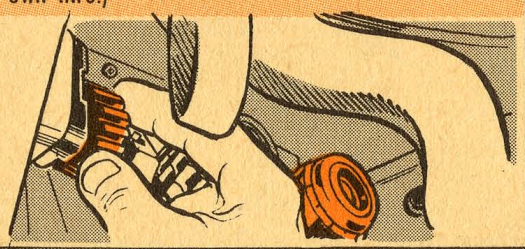
STEREOSCOPIC PATTERN

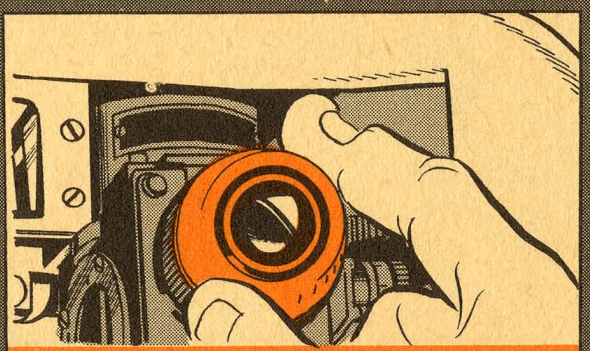
SIGHTING RETICLE (GUN LAYING RETICLE)

GET SET

THE WAY THE COMMANDER HANDLES THE RANGE FINDER'S GOT A LOT TO DO WITH GETTING THOSE FIRST ROUND HITS. THAT INSTRUMENT'S BOTH HIS SIGHT AND HIS TOOL FOR GETTING THE RANGE FOR THE 90-MM GUN.

THE MAN WHO'S GOING TO DO THE LOOKING SHOULD FIRST SET IN HIS OWN INTERPUPILLARY SETTING (SPACE BETWEEN THE EYES) AND DIOPTER SETTING (FOCUS ADJUSTMENTS). (IF YOU'RE ON-THE-BALL, YOU HAVE YOUR OWN SETTINGS JOTTED DOWN SOME PLACE FOR YOUR OWN INFO.)

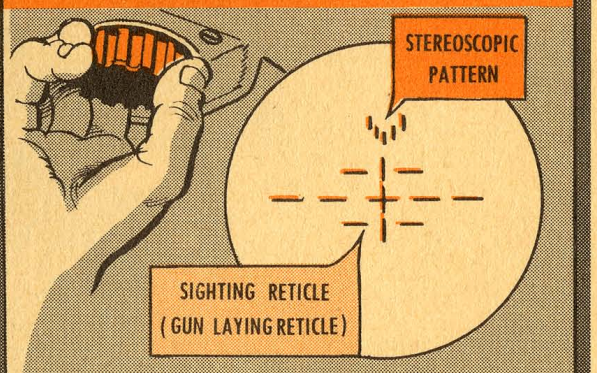




SINCE EACH MAN'S EYES WORK DIFFERENTLY, YOU'VE GOT TO ADJUST THE SIGHT FOR THE DIFFERENCES. THE GUNNER PUTS HIS DIOPTER SETTING IN HIS PERISCOPE.

TURN THE RANGE FINDER'S STEREO-SWITCH UP TO STEREO-POSITION, AND PUT SOME LIGHT ON THE SUBJECT BY TURNING UP ITS RHEOSTAT UNTIL YOU SEE THE STEREO-RETICLE NICE AND CLEAR.

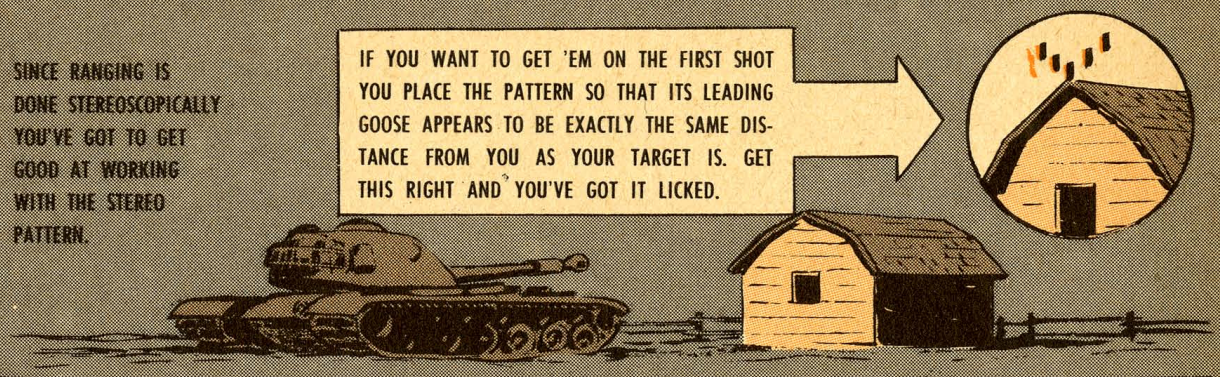
WITH THE HALVING-KNOB, PUT THE LEFT AND RIGHT STEREO PATTERNS ON THE SAME LEVEL.



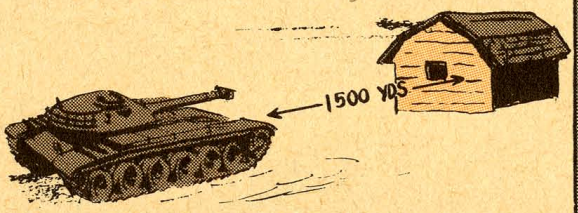
THAT INTERNAL CORRECTION SETTING...

SINCE RANGING IS DONE STEREOSCOPICALLY YOU'VE GOT TO GET GOOD AT WORKING WITH THE STEREO PATTERN.

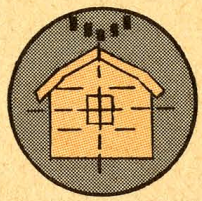
IF YOU WANT TO GET 'EM ON THE FIRST SHOT YOU PLACE THE PATTERN SO THAT ITS LEADING GOOSE APPEARS TO BE EXACTLY THE SAME DISTANCE FROM YOU AS YOUR TARGET IS. GET THIS RIGHT AND YOU'VE GOT IT LICKED.



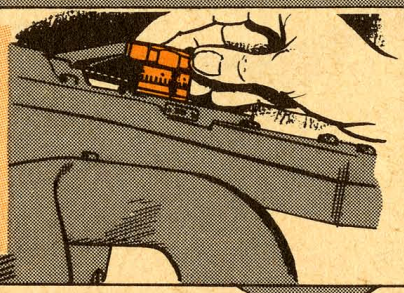
TO DO THAT, FIRST PICK OUT A TARGET OF KNOWN RANGE. SET KNOWN RANGE ON RANGE-SCALE WITH RANGE KNOB.

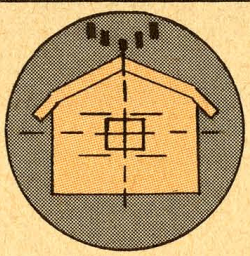


LAY STEREO PATTERN ABOVE THE TARGET WITH TURRET CONTROLS.



NEXT TURN INTERNAL-CORRECTION-KNOB TO "25". WHILE SIGHTING ON TARGET ROTATE ICS-KNOB UNTIL LEADING GOOSE OF STEREO PATTERN...

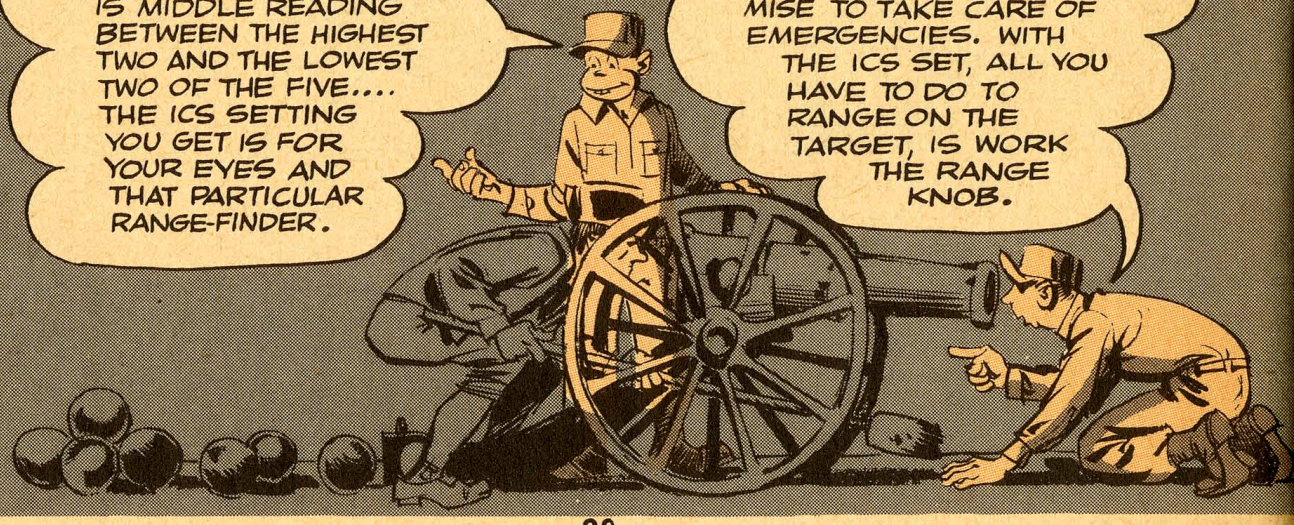




APPEARS IN THE SAME PLANE AS TARGET. IT TAKES LOTS OF PRACTICE TO GET THIS DOWN PAT. BUT ONCE YOU'VE GOT THE HANG OF IT, IT'S EASY.

WHEN YOU FEEL YOU'VE GOT IT, READ YOUR ICS-KNOB AND WRITE DOWN READING. DO THIS FIVE TIMES AND USE MEDIAN FOR YOUR ICS SETTING. THIS MEDIAN IS MIDDLE READING BETWEEN THE HIGHEST TWO AND THE LOWEST TWO OF THE FIVE.... THE ICS SETTING YOU GET IS FOR YOUR EYES AND THAT PARTICULAR RANGE-FINDER.

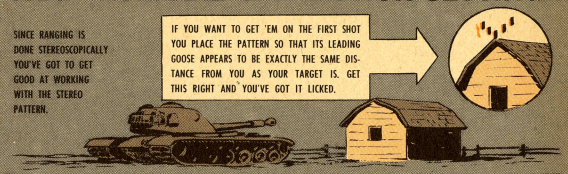
IF YOU DON'T HAVE TIME TO FIND YOUR ICS, AND EXPERIENCE HASN'T GIVEN YOU AN AVERAGE READING, JUST KEEP THE SETTING AT "25". THIS IS A SORT OF A COMPROMISE TO TAKE CARE OF EMERGENCIES. WITH THE ICS SET, ALL YOU HAVE TO DO TO RANGE ON THE TARGET, IS WORK THE RANGE KNOB.



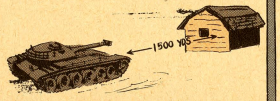
THAT INTERNAL CORRECTION SETTING...

SINCE RANGING IS DONE STEREOSCOPICALLY YOU'VE GOT TO GET GOOD AT WORKING WITH THE STEREO PATTERN.

IF YOU WANT TO GET 'EM ON THE FIRST SHOT YOU PLACE THE PATTERN SO THAT ITS LEADING GOOSE APPEARS TO BE EXACTLY THE SAME DISTANCE FROM YOU AS YOUR TARGET IS. GET THIS RIGHT AND YOU'VE GOT IT LICKED.

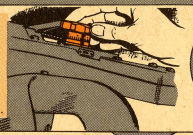


TO DO THAT, FIRST PICK OUT A TARGET OF KNOWN RANGE. SET KNOWN RANGE ON RANGE-SCALE WITH RANGE KNOB.



LAY STEREO PATTERN ABOVE THE TARGET WITH TURRET CONTROLS.

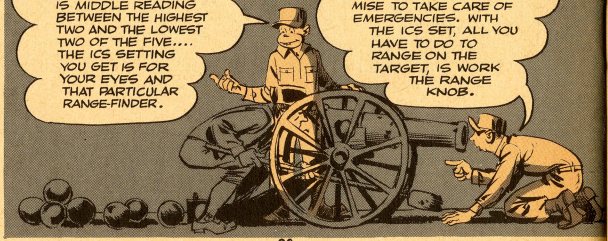
NEXT TURN INTERNAL-CORRECTION-KNOB TO "25." WHILE SIGHTING ON TARGET ROTATE ICS-KNOB UNTIL LEADING GOOSE OF STEREO PATTERN...



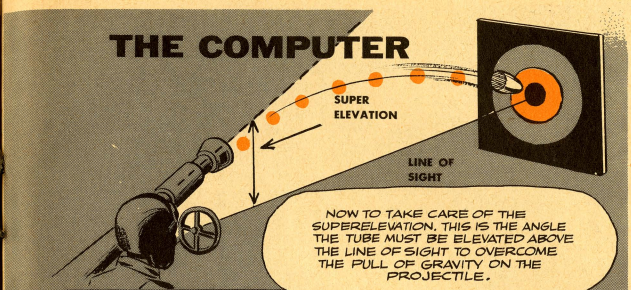
APPEARS IN THE SAME PLANE AS TARGET. IT TAKES LOTS OF PRACTICE TO GET THIS DOWN PAT. BUT ONCE YOU'VE GOT THE HANG OF IT, IT'S EASY.

WHEN YOU FEEL YOU'VE GOT IT, READ YOUR ICS-KNOB AND WRITE DOWN READING. DO THIS FIVE TIMES AND USE MEDIAN FOR YOUR ICS SETTING. THIS MEDIAN IS MIDDLE READING BETWEEN THE HIGHEST TWO AND THE LOWEST TWO OF THE FIVE.... THE ICS SETTING YOU GET IS FOR YOUR EYES AND THAT PARTICULAR RANGE-FINDER.

IF YOU DON'T HAVE TIME TO FIND YOUR ICS, AND EXPERIENCE HASN'T GIVEN YOU AN AVERAGE READING, JUST KEEP THE SETTING AT "25". THIS IS A SORT OF A COMPROMISE TO TAKE CARE OF EMERGENCIES. WITH THE ICS SET, ALL YOU HAVE TO DO TO RANGE ON THE TARGET, IS WORK THE RANGE KNOB.

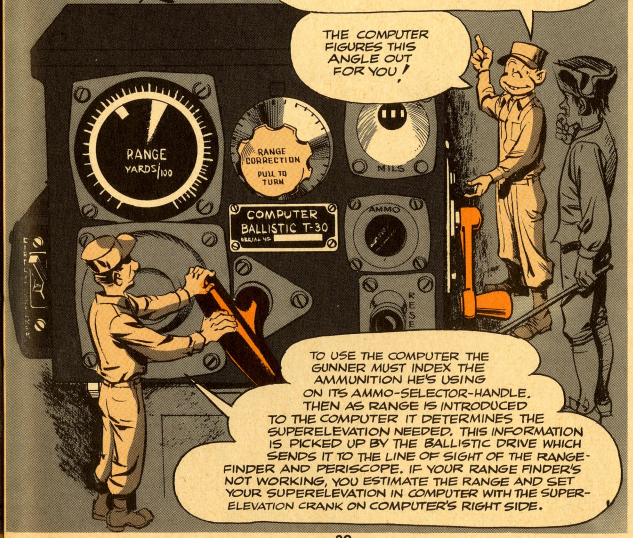


THE COMPUTER



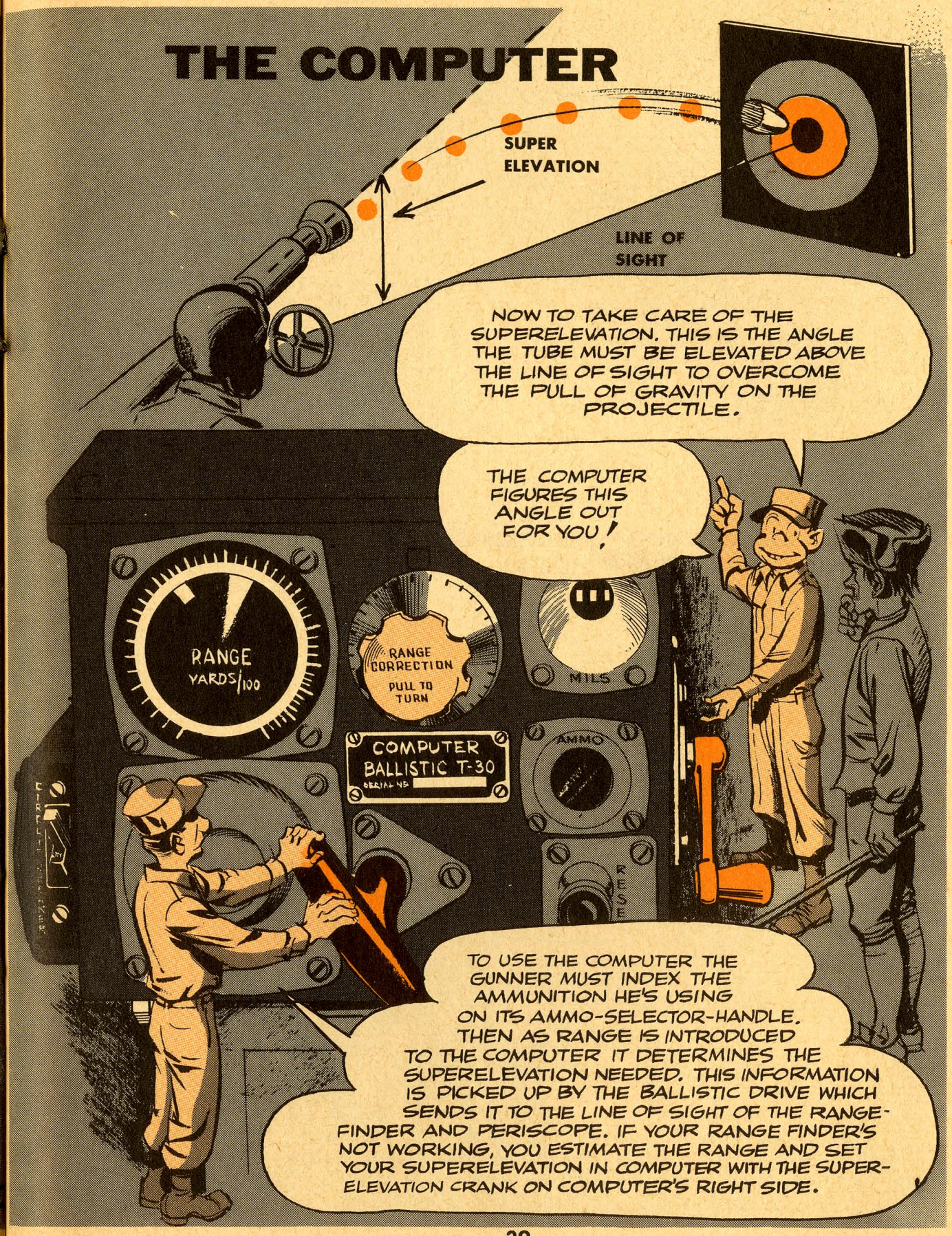
NOW TO TAKE CARE OF THE SUPERELEVATION. THIS IS THE ANGLE THE TUBE MUST BE ELEVATED ABOVE THE LINE OF SIGHT TO OVERCOME THE PULL OF GRAVITY ON THE PROJECTILE.

THE COMPUTER FIGURES THIS ANGLE OUT FOR YOU!



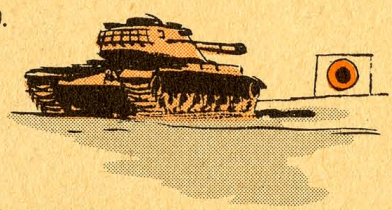
TO USE THE COMPUTER THE GUNNER MUST INDEX THE AMMUNITION HE'S USING ON ITS AMMO-SELECTOR-HANDLE. THEN AS RANGE IS INTRODUCED TO THE COMPUTER IT DETERMINES THE SUPERELEVATION NEEDED. THIS INFORMATION IS PICKED UP BY THE BALLISTIC DRIVE WHICH SENDS IT TO THE LINE OF SIGHT OF THE RANGE-FINDER AND PERISCOPE. IF YOUR RANGE FINDER'S NOT WORKING, YOU ESTIMATE THE RANGE AND SET YOUR SUPERELEVATION IN COMPUTER WITH THE SUPER-ELEVATION CRANK ON COMPUTER'S RIGHT SIDE.

THE COMPUTER

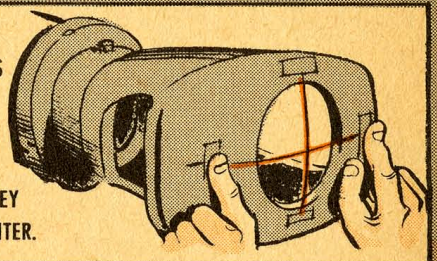


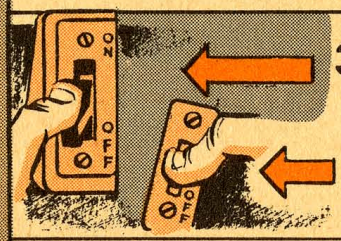
ON YOUR MARK... BORESIGHT

1 PUT YOUR TANK ON LEVEL GROUND. PICK OUT SQUARE CORNERED TARGET ABOUT 1500 YARDS FROM YOUR TANK.

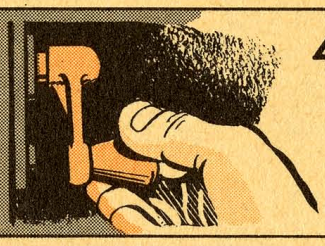


2 TAPE CROSS-HAIRS ON GUN'S MUZZLE BRAKE, USING BRAKE'S WITNESS MARKS TO MAKE SURE THEY CROSS IN THE CENTER.



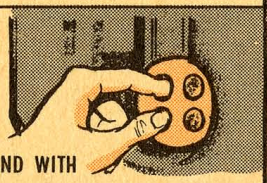


3 SET COMPUTER'S CIRCUIT-BREAKER SWITCH TO **OFF**, AND/OR RANGE FINDER'S BALLISTIC-COMPUTER CONTROL SWITCH TO **OFF**.

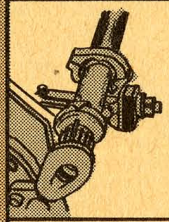


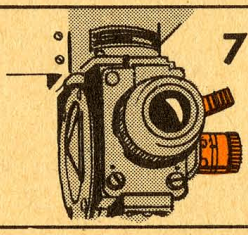
4 USING THE COMPUTER'S HANDCRANK, THE GUNNER SETS THE SUPER ELEVATION SCALE TO ZERO.

5 LAY GUN ON TARGET WITH TURRET CONTROLS. DO THIS WITH BREECH BORE-SIGHT. IF YOU HAVE NONE, TAKE OUT PERCUSSION MECHANISM AND WITH BREECH BLOCK CLOSED SIGHT THROUGH TUBE WITH BINOCULAR.

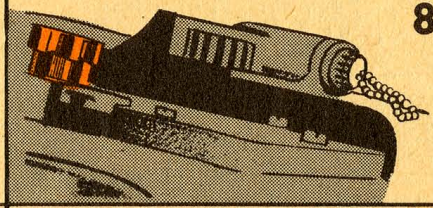


6 THE COMMANDER MAKES DIOPTER, INTERPUPILLARY, AND ICS ADJUSTMENTS ON RANGE FINDER AND SUPERIMPOSES FLYING GEESE OF BOTH EYEPIECES WITH HALVING KNOB.



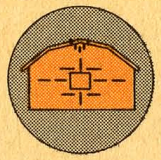


7 GUNNER SETS IN THE DIOPTER ADJUSTMENTS ON THE TELESCOPE AND PERISCOPE.

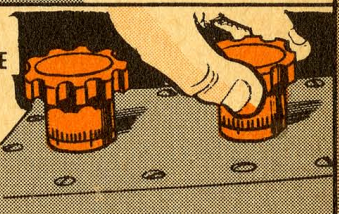


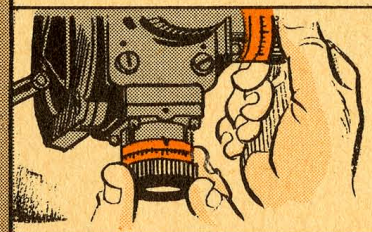
8 THEN YOU SET THE KNOWN RANGE (ABOUT 1500 YARDS) ON THE RANGE-FINDER'S RANGE SCALE.

9 LOOKING THROUGH RANGE-FINDER'S LEFT EYEPIECE, LAY ITS CROSS ON THE TARGET—USING ITS AZIMUTH AND ELEVATION BORESIGHT KNOBS. LOCK KNOBS AND SLIP SCALES TO "3"

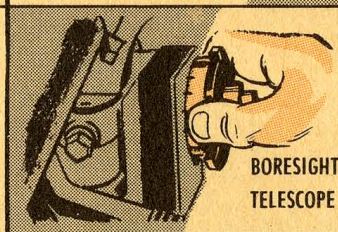


10 LOOKING THROUGH ITS RIGHT EYEPIECE DO SAME WITH ITS AUXILIARY BORESIGHT KNOBS. LOCK BORESIGHT KNOBS AND SLIP SCALES TO "3"



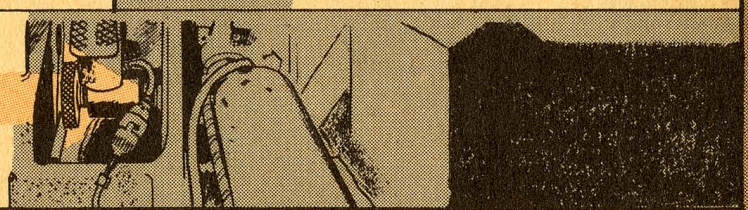


11 GIVE PERISCOPE SAME TREATMENT AND SLIP ITS BORESIGHT KNOBS TO "3"



12 THE TELESCOPE'S AZIMUTH AND ELEVATION KNOBS ARE ON ITS MOUNT. BUT HERE SET BORESIGHT KNOBS TO "2." YOU'LL NEED TELESCOPE IF RANGE-FINDER GOES DEAD.

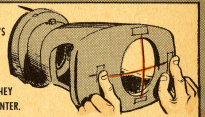
13 FINALLY, LAY MACHINE GUN ON TARGET. REMOVE ITS BACK PLATE AND LOCK ITS BARREL. THEN TWIST ITS AZIMUTH AND ELEVATION MECHANISM.

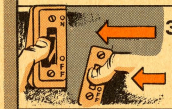


ON YOUR MARK... BORESIGHT

1 PUT YOUR TANK ON LEVEL GROUND. PICK OUT SQUARE CORNERED TARGET ABOUT 1500 YARDS FROM YOUR TANK.

2 TAPE CROSS-HAIRS ON GUN'S MUZZLE BRAKE, USING BRAKE'S WITNESS MARKS TO MAKE SURE THEY CROSS IN THE CENTER.



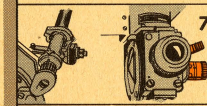


3 SET COMPUTER'S CIRCUIT-BREAKER SWITCH TO **OFF**, AND/OR RANGE FINDER'S BALLISTIC-COMPUTER CONTROL SWITCH TO **OFF**.

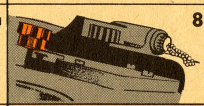
4 USING THE COMPUTER'S HANDCRANK, THE GUNNER SETS THE SUPER ELEVATION SCALE TO ZERO.

5 LAY GUN ON TARGET WITH TURRET CONTROLS. DO THIS WITH BREECH BORESIGHT. IF YOU HAVE NONE, TAKE OUT PERCUSSION MECHANISM AND WITH BREECH BLOCK CLOSED SIGHT THROUGH TUBE WITH BINOCULAR.

6 THE COMMANDER MAKES DIOPTER, INTERPUPILLARY, AND ICS ADJUSTMENTS ON RANGE FINDER AND SUPERIMPOSES FLYING GEESE OF BOTH EYEPIECES WITH HALVING KNOB.



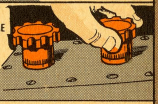
7 GUNNER SETS IN THE DIOPTER ADJUSTMENTS ON THE TELESCOPE AND PERISCOPE.

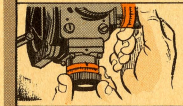


8 THEN YOU SET THE KNOWN RANGE (ABOUT 1500 YARDS) ON THE RANGE-FINDER'S RANGE SCALE.

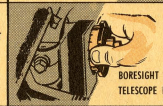
9 LOOKING THROUGH RANGE-FINDER'S LEFT EYEPIECE, LAY ITS CROSS ON THE TARGET—USING ITS AZIMUTH AND ELEVATION BORESIGHT KNOBS. LOCK KNOBS AND SLIP SCALES TO "3"

10 LOOKING THROUGH ITS RIGHT EYEPIECE DO SAME WITH ITS AUXILIARY BORESIGHT KNOBS. LOCK BORESIGHT KNOBS AND SLIP SCALES TO "3"





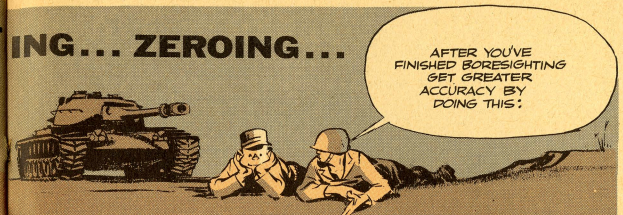
11 GIVE PERISCOPE SAME TREATMENT AND SLIP ITS BORESIGHT KNOBS TO "3"



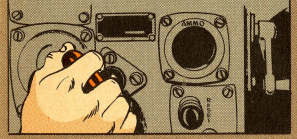
12 THE TELESCOPE'S AZIMUTH AND ELEVATION KNOBS ARE ON ITS MOUNT. BUT HERE SET BORESIGHT KNOBS TO "2." YOU'LL NEED TELESCOPE IF RANGE-FINDER GOES DEAD.

13 FINALLY, LAY MACHINE GUN ON TARGET. REMOVE ITS BACK PLATE AND LOCK ITS BARREL. THEN TWIST ITS AZIMUTH AND ELEVATION MECHANISM.

ING... ZEROING...

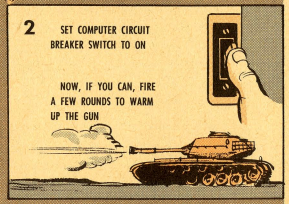


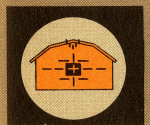
1 WITH YOUR TARGET STILL AT ABOUT 1500 YARDS INDEX TYPE OF AMMO YOU'RE GOING TO USE ON THE COMPUTER (APC IS BEST FOR ZEROING)



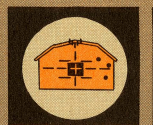
2 SET COMPUTER CIRCUIT BREAKER SWITCH TO ON

NOW, IF YOU CAN, FIRE A FEW ROUNDS TO WARM UP THE GUN

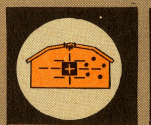




LAY PERISCOPE RETICLE ON TARGET USING TURRET CONTROLS AND FIRE.



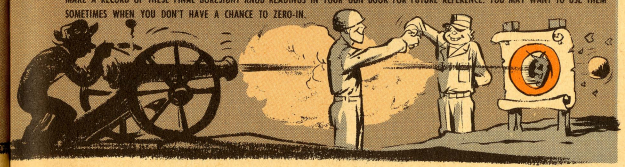
DO THIS FIVE TIMES—LAY GUN ON TARGET SAME WAY AND SAME SPOT FOR EACH SHOT—REGARDLESS WHERE THE SHOT LANDS.



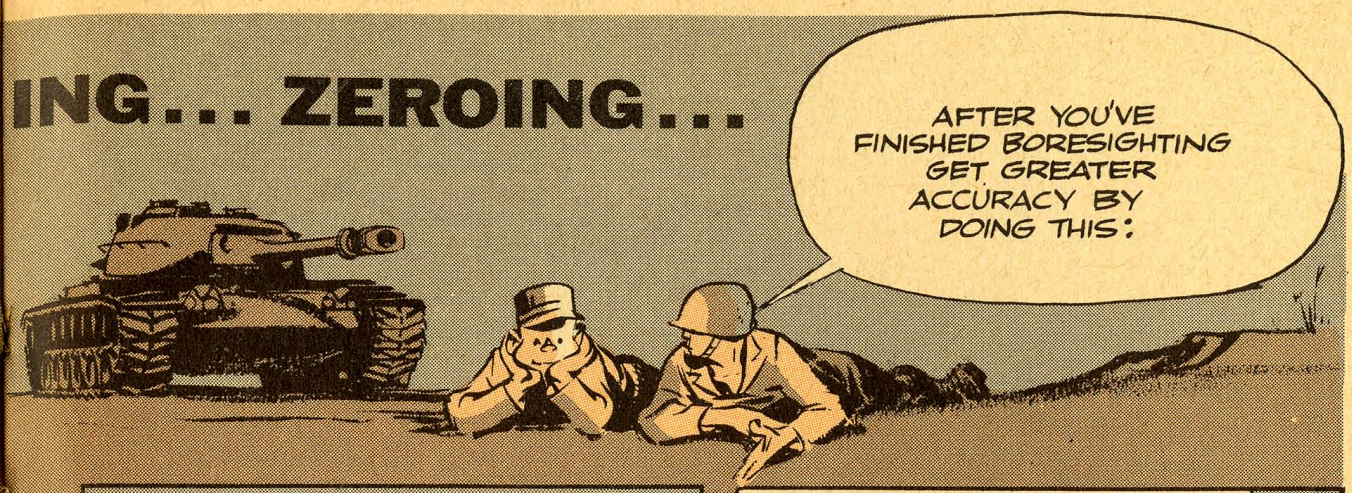
AFTER THE LAST ROUND'S FIRED AND YOU'VE FORMED YOUR SHOT GROUP, RELAY ON THE ORIGINAL AIMING POINT—AGAIN WITH TURRET CONTROLS.

NOW PLACE EACH INSTRUMENT'S RETICLE TO THE CENTER OF THE SHOT GROUP WITH THE BORESIGHT KNOBS. DO NOT USE THE TURRET CONTROLS.

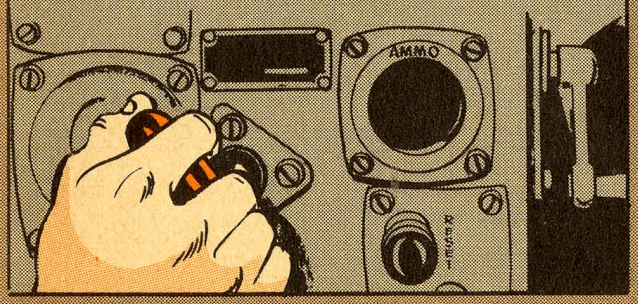
MAKE A RECORD OF THESE FINAL BORESIGHT KNOB READINGS IN YOUR GUN BOOK FOR FUTURE REFERENCE. YOU MAY WANT TO USE THEM SOMETIMES WHEN YOU DON'T HAVE A CHANCE TO ZERO-IN.



ING... ZEROING...

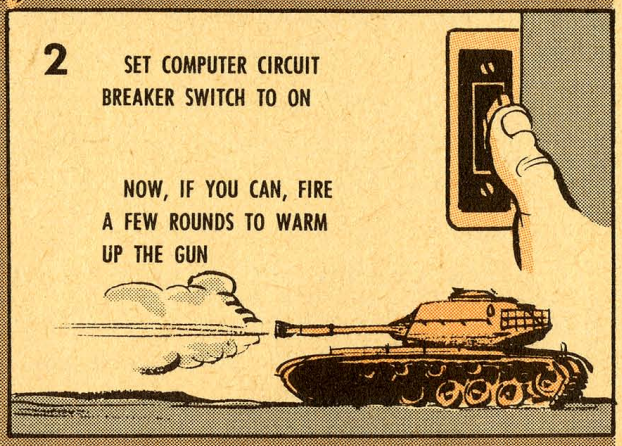


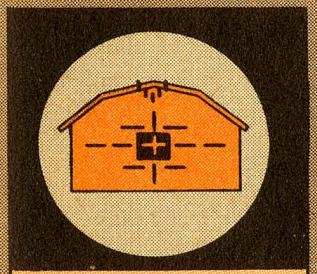
1 WITH YOUR TARGET STILL AT ABOUT 1500 YARDS INDEX TYPE OF AMMO YOU'RE GOING TO USE ON THE COMPUTER (APC IS BEST FOR ZEROING)



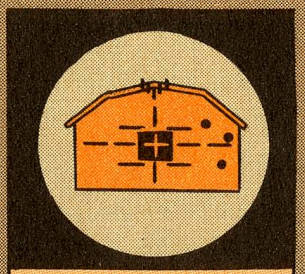
2 SET COMPUTER CIRCUIT BREAKER SWITCH TO ON

NOW, IF YOU CAN, FIRE A FEW ROUNDS TO WARM UP THE GUN

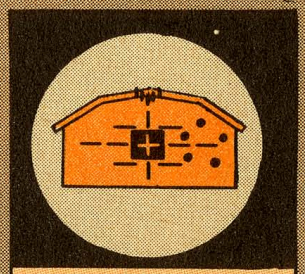




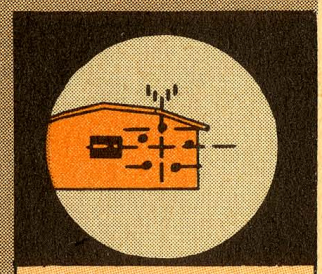
LAY PERISCOPE RETICLE ON TARGET USING TURRET CONTROLS AND FIRE.



DO THIS FIVE TIMES—LAY GUN ON TARGET SAME WAY AND SAME SPOT FOR EACH SHOT—REGARDLESS WHERE THE SHOT LANDS.

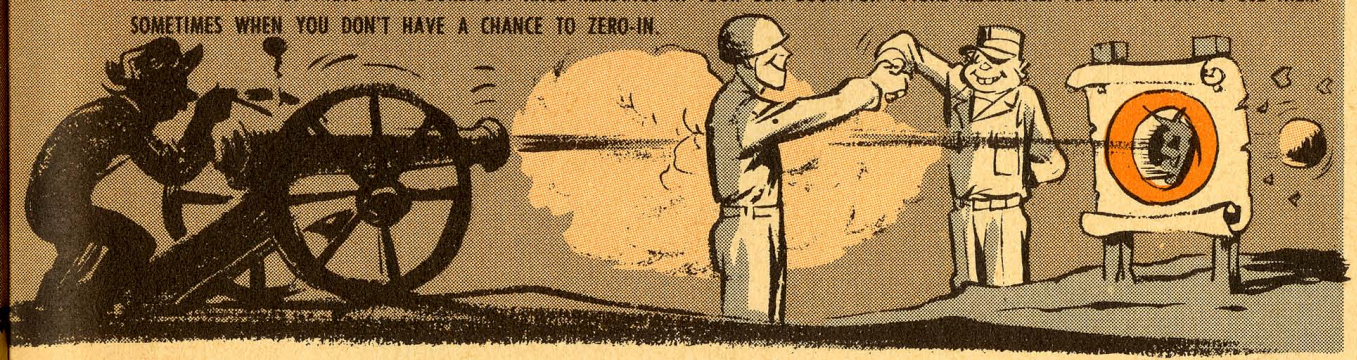


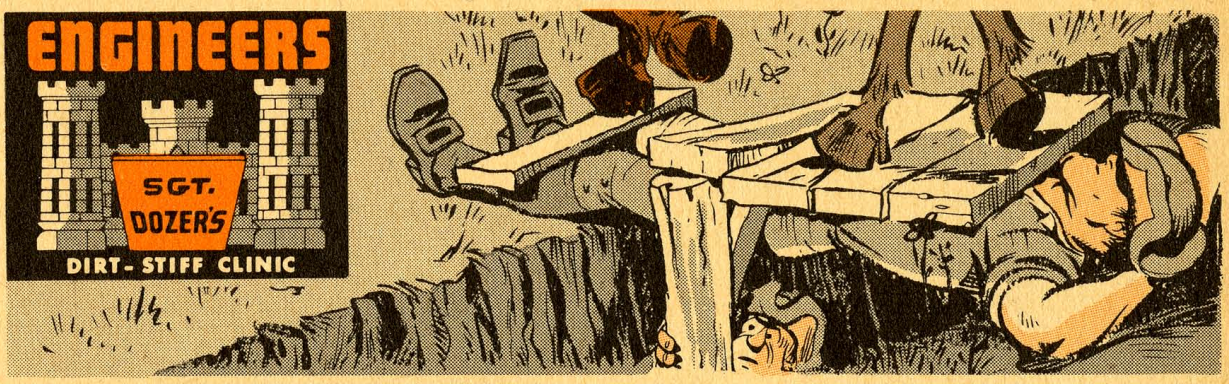
AFTER THE LAST ROUND'S FIRED AND YOU'VE FORMED YOUR SHOT GROUP, RELAY ON THE ORIGINAL AIMING POINT—AGAIN WITH TURRET CONTROLS.



NOW PLACE EACH INSTRUMENT'S RETICLE TO THE CENTER OF THE SHOT GROUP WITH THE BORESIGHT KNOBS. DO NOT USE THE TURRET CONTROLS.

MAKE A RECORD OF THESE FINAL BORESIGHT KNOB READINGS IN YOUR GUN BOOK FOR FUTURE REFERENCE. YOU MAY WANT TO USE THEM SOMETIMES WHEN YOU DON'T HAVE A CHANCE TO ZERO-IN.





HERCULES REPAIR PARTS

Dear Sgt Dozer,

What's the part number for the shutter-control on a Hercules engine Model JXL A2ER? The engine's used on our general purpose, 12-ton, mobile shop trailer (Couse type medium, Serial #15, Stock List 00-0795-000-010.)

It's tough to get parts or find part numbers for this engine since we have no TM or Eng 7 for it. The manufacturer's manuals we have don't help much as far as ordering repair parts is

concerned. Can you steer us to the right spare parts catalogs and TM's for the JXL A2ER and also for the Couse trailer?

Sgt R. J. M.

Dear Sgt R. J. M.,

If your engine's shutter-control is manually operated, the item you need is: Code 827, Eng Part No. 474x.

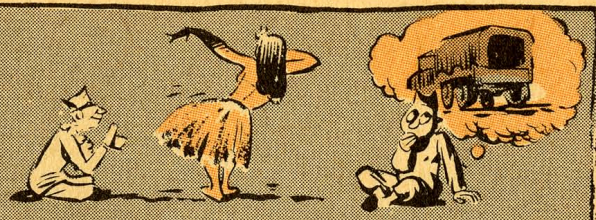
If it's automatic, ask for: Automatic Radiator Shutter Control "Shutterstat" (Engine) Code 827, Eng Part No. C4771-8. You can get 'em (thru your regular Engineer supply channels) from the Engineer Spare Parts Supply and Stock Control Office, Columbus 16, Ohio.

The TM and Eng 7 and 8 for the Couse Shop Set #1 are in the mill. So's a TM for Hercules JX and JXL series engines which will cover your JXL A2ER engine. (This TM'll give you maintenance help, but it won't carry info on standardized basic parts.) Keep an eye on "The Roundup" section in PS for the release date of these publications.

The manufacturer's manual can be used in place of the TM and/or Eng 7 and 8. You can ask for copies of: Couse Manufacturing Company Form #82453-MIM "Loading and Packing List," and the Couse instruction manual for the Shop, Mobile, General Purpose, 12-ton Semi-trailer mounted, Set No. 1, Couse Type MED. You can request these manufacturer's manuals like it says in par 32c(2) of SR 711-15-5 (15 Jan 54) "Stock Control." For your maintenance help, requisition LO's 5-9128-1, -2, -3, and TB 5-9128-1 through your publication channels.

Sgt Dozer

SHIFTY AXLE



Dear Sgt Dozer,

The electric gear-shift motors for the two-speed axles on our IHC refuse trucks 1953 vintage collect water somehow and rust.

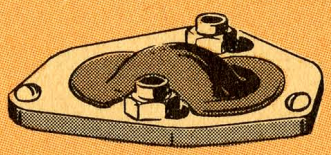
The motors seem to be waterproof. Yet one we checked had water standing in it. And one of the motors conked out completely on a truck with just 149 miles.

Do you think the rust was caused by condensation due to lack of maintenance while these trucks were in storage, or aren't the motors as waterproof as they ought to be? After all, they're located near the differential where they get splashed.

C. F.

Dear Mr. C. F.,

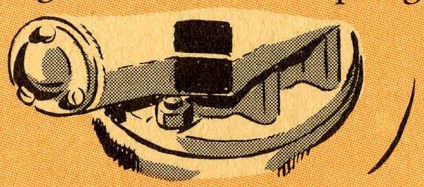
Those motors are meant to be waterproof. Under certain operating and storage conditions, however, water has gotten by the two cover-to-motor elastic stop-nuts.



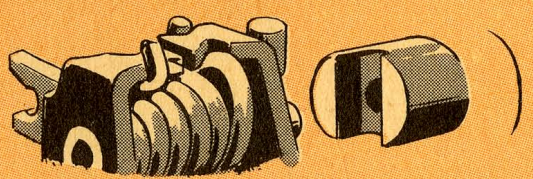
This trouble has been cleared up in recent production of these assemblies. You can make these nuts waterproof by applying permatex or a similar compound.

On the truck that gave you trouble at 149 miles, best you drain the lube and put in a fresh supply before sending it out on its rounds.

Make sure the shift assembly is screwed tight to the differential carrier so water won't seep between the shift housing and its rubber diaphragm.



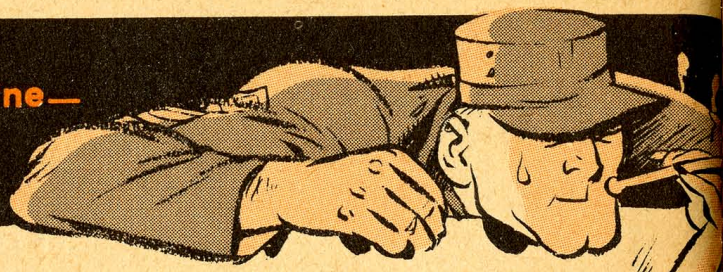
Also, the rubber diaphragm must have its spring retainer in place and fit tight against the shift fork so axle lubricant won't get through from the axle-head assembly to the shift assembly.



Check your equipment's manuals. The Eaton Manufacturing Co's, booklet, Form A-57 12-50, tells you all about these electric shift assemblies.

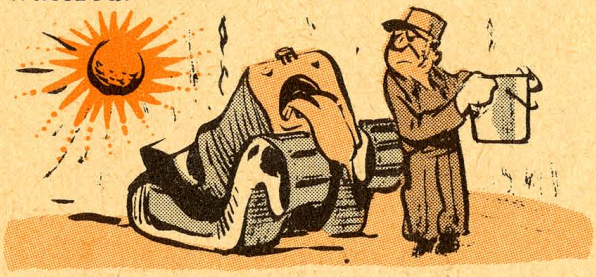
Sgt Dozer

Help Your Engine—



Man-oh-man, there's nothing better on a hot summer day than to stretch out in the shade and sip a tall glass.

Sure, that's fine, but what about your engine that's working eight hours, and maybe longer, under a broiling sun? It can't plop down in a lawn chair and guzzle a gallon or two. It's depending on you to keep its cooling system well watered.

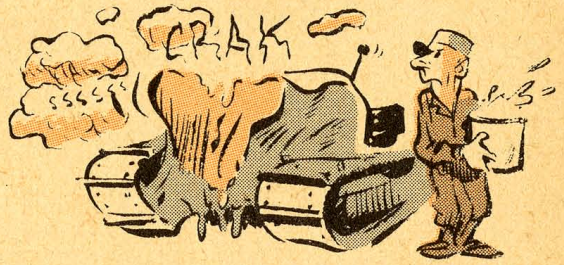


There are several things you can do to make life rosy for your engine. One of the basic jobs is making sure your engine has enough water in the cooling system. It does get thirsty, you know.

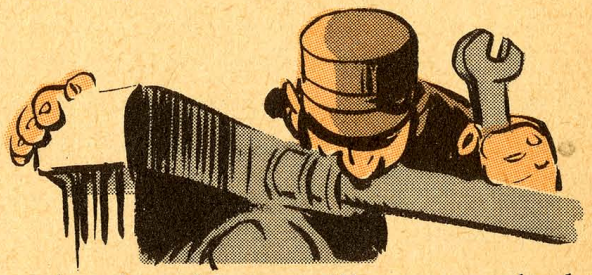
And be sure the water's clean. After all, you wouldn't drink dirty water,

even for a chaser, so why force it in your engine? Soft water or rain water is best.

If you want to keep your metal horse from having a bad case of indigestion, don't pour in cold water when the engine's hot. If you have to do it, make sure the engine's running.



Your radiator and hose connections are also mighty important. It's a good idea to check 'em over every 60 hours for leaks and loose connections. If that cooling system is the closed type, make sure the radiator cap's on tight, 'cause it keeps the pressure in. A clogged elbow in the hose or a clogged overflow pipe can also give you trouble. Better look 'em over.



Another thing you'll want to check are the thermostats. Take 'em out, check 'em, and put in new ones if necessary. For the check, put a fire under a pan of water, heat it up, and drop the thermostats and a thermometer in. The ther-

Help Your Engine—

BEAT THE HEAT

Man-oh-man, there's nothing better on a hot summer day than to stretch out in the shade and sip a tall glass.

Sure, that's fine, but what about your engine that's working eight hours, and maybe longer, under a broiling sun? It can't plop down in a lawn chair and guzzle a gallon or two. It's depending on you to keep its cooling system well watered.

There are several things you can do to make life rosy for your engine. One of the basic jobs is making sure your engine has enough water in the cooling system. It does get thirsty, you know.

And be sure the water's clean. After all, you wouldn't drink dirty water,

even for a chaser, so why force it in your engine? Soft water or rain water is best.

If you want to keep your metal horse from having a bad case of indigestion, don't pour in cold water when the engine's hot. If you have to do it, make sure the engine's running.

Your radiator and hose connections are also mighty important. It's a good idea to check 'em over every 60 hours for leaks and loose connections. If that cooling system is the closed type, make sure the radiator cap's on tight, 'cause it keeps the pressure in. A clogged elbow in the hose or a clogged overflow pipe can also give you trouble. Better look 'em over.

Another thing you'll want to check are the thermostats. Take 'em out, check 'em, and put in new ones if necessary. For the check, put a fire under a pan of water, heat it up, and drop the thermostats and a thermometer in. The thermostats generally start to open at 165°F. and are wide open at about 190°.

On the outside of the radiator core, you want to be sure and clean off any dirt or trash regularly. And the space between the fins should be cleaned every 60 hours with a low pressure air or water hose. Do this from the engine side out. While you're at it, might as well straighten any bent fins.

And remember, these fan belts'll need attention, too. Just to make sure there isn't any slippage, give the belt a tension check (see your TM for amount) every 60 hours.

Also, make like a Dan'l Boone and be on the lookout for water pump leaks. The packing type might need the packing gland tightened or new packing installed, while the packless type could need the sealing parts replaced.

If you'll take care to do these things, your engine's cooling system'll take care not to give you any trouble.

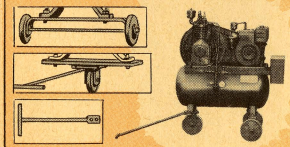
WHEELIN' ALONG

Dear Sgt Dozer,

We have so many uses for the DeVilbiss air compressor at our AAA site that we had to find an easy way to get it from place to place.

We found some metal wheels in salvage, so we used them to make the compressor a mobile piece of equipment (like it shows in the picture). Now we can easily pull the air compressor from place to place.

Cpl D. E. F.



Dear Cpl D. E. F.,

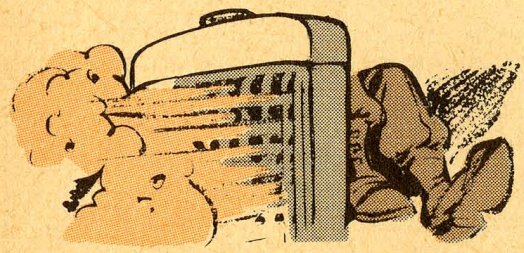
That's one sure way of makin' a molehill out of a mountain. A darned good idea. And remember, any kind of salvage wheels—metal, rubber, and even wood—will do the trick.

Sgt Dozer

BEAT THE HEAT

mostats generally start to open at 165°F. and are wide open at about 190°.

On the outside of the radiator core, you want to be sure and clean off any dirt or trash regularly. And the space between the fins should be cleaned every 60 hours with a low pressure air or water hose. Do this from the engine side out. While you're at it, might as well straighten any bent fins.



And remember, these fan belts'll need attention, too. Just to make sure there isn't any slippage, give the belt a tension check (see your TM for amount) every 60 hours.

Also, make like a Dan'l Boone and be on the lookout for water pump leaks. The packing type might need the packing gland tightened or new packing installed, while the packless type could need the sealing parts replaced.

If you'll take care to do these things, your engine's cooling system'll take care not to give you any trouble.

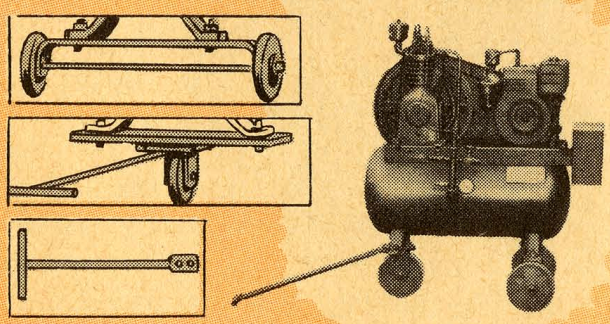
WHEELIN' ALONG

Dear Sgt Dozer,

We have so many uses for the DeVilbiss air compressor at our AAA site that we had to find an easy way to get it from place to place.

We found some metal wheels in salvage, so we used them to make the compressor a mobile piece of equipment (like it shows in the picture). Now we can easily pull the air compressor from place to place.

Cpl D. E. F.



Dear Cpl D. E. F.,

That's one sure way of makin' a molehill out of a mountain. A darned good idea. And remember, any kind of salvage wheels—metal, rubber, and even wood—will do the trick.

Sgt Dozer

Somebody slipped a cog on ENG 7 and 8-5053. Yep, the part number for the commutator end-bearing on the John Reiner 60-cycle electric generator was left out. The bearing applies to the engine battery-charging generator rotor shaft. Here're the part numbers for the two bearings for the rotor shaft:

Drive end bearing—522-203KLL2

Commutator end bearing—3110-156-3496

Change 2 to ENG 7 and 8-5053 will include the dope on the commutator end bearing as well as the engine hour-meter. The hour-meter was also left out. It carries a part number of 647-HF 1446.

And while on the subject, don't forget that the ENG 7 and 8 Supply Manuals should be used to determine parts requirements when you can't find the straight poop in the TM's.

LUBE ORDERS

5-2088 Pump, cent, Marlow mod 34 PV, 4 Jan 55

5-9510-2 Crane-Shvl, trk-mtd, Harnischfeger mod 255-A-TC, 13 Dec 54

5-9195 Ice plant, 3.6-ton, York Ser. No. A-354771 & higher, 25 Feb 55

5-5421 Engine, gasoline, Cont mod FS-162, 24 Feb 55

5-9057 Trailer, chassis, gen, ACF-Brill mod M-200, 24 Feb 55

5-9130 Conveyor, belt, motor dr, Lamson, mod, 10 Feb 55

5-1280-1 Asphalt & Soil aggr mix plant, Barber-Greene 841, 2 Feb 55

5-1161 Distr, water, 1000-gal, Rosco mod MOE, 8 Feb 55

5-5405 Engine, gasoline, Chrysler mod C-36-520 (IND 9 series), 8 Feb 55

TECHNICAL MANUALS

5-2023 Well Drlg Mach, Geo E. Failing mod 43-SA, 31 Dec 54

5-5009 Gen Set, Stewart & Stevenson mod WGD-3012, 27 Dec 54

5-4011 Saw, circular, woodworking, Northfield mod 4, 9 Mar 55

5-5341 Compressor, air, 16-cfm, Harris mod 216, 10 Mar 55

5-2013 Pump, centrif, 100-GPM, Gorman-Rupp mod 1205A, 6 Jan 55

5-9524 Crane-shovel, 1/2-cu. yd., 6-10-ton, Unit mod 1014, 30 Dec 54

5-1077 Heater, asphalt, William Bros mod SG-41T, 5 Jan 55

5-5249 Engine, diesel, Cont 2D-129, GD-157, GD-181, ED-201, HD-260, JD-382, 20 Dec 54

5-9111 Gen, acetylene, sight feed mod TM CP-750, 7 Jan 55

TECHNICAL BULLETINS

5-1400-7 Scrubber & Washer, 150TPH, Pioneer mod, 6 Jan 55

5-5421-1 Engine, gasoline, Cont. mod FS-162, 10 Jan 55

5-1225-1 Rooter, road, LeTourneau-West'house mod K-30, 8 Mar 55

5-5353-1 Gen set, 30-KW, Consol Diesel Elec 1905, 28 Feb 55

5-2041-1 Pump, centrif, fire trk mtd, Darley mod KFF-500, 25 Feb 55

5-2049-1 Pump, centrif, fire trk mtd, Darley mod F-300, 25 Feb 55

5-5229-1 Engine, gasoline, Briggs & Stratton, mod W1, 25 Feb 55

5-9136-1 Sawmill, port, American mod No. 3, 4 Feb 55

5-9585-1 Conveyor, drag type, Barber-Greene mod 689, 7 Feb 55

5-1160-1 Distr, water, 1000-Gal, Littleford mod M-75, 21 Jan 55

5-1167-1 Kettle, asph, 110-Gal., Littleford mod US-84-HD-2, 21 Jan 55

5-5093-1 Compressor, air, 16-cfm, American Brake Shoe GE-331-XA, 20 Jan 55

5-5246-1 Engine, gasoline, Waukesha mods 140-GK, 140-GKB, 140-GZB, 7 Feb 55

5-5334-1 Gen Set, 100-KW, Consol Diesel mod 1877, 20 Jan 55

5-9057-1 Trailer, chassis, gen, ACF-Brill mod M-200, 20 Jan 55

5-5445-1 Engine, Diesel, Cummins mod H, HS, HR, HRS-NH, NHS, NHRS, 18 Jan 55

MODIFICATION WORK ORDERS

5256-1 Engine, gasoline, Briggs & Stratton mod Z series, 20 Jan 55

5257-1 Engine, gasoline, Briggs & Stratton mod A series, 20 Jan 55

ENG-5090-1 Gen Set, 30-KW, Buda mod 6-DTG-317, 17 Feb 55

ENG-1090-2 Rooter, road, Le-Tourneau-West'house H-3 & K-30, 11 Feb 55

ENG-1213-1 Scraper, road, LeTourneau-West'house LPO, 16 Feb 55

ENG-1230-1 Plow, disc, towed, John Deere mod 205, 14 Feb 55

ENG-5044-1 Gen Set, 5-KW, Onan WC4-7.5S, 21 Jan 55

ENG-3302-1 Tractor, whl type, M-R-S mod 150, 9 Feb 55

SUPPLY MANUALS

ENG 7,8&9-5381 Gen Set, 15-KW, Atlantic Mfg Co. mod 120GS, 14 Feb 55

ENG 7&8-9852 Crane-shovel, 3/4-cu yd, 15-ton, Thew-Lorain MC-4, 19 Jan 55

ENG 7&8-1340 Loader, aggr, bucket, Frank G. Hough HM, 14 Jan 55

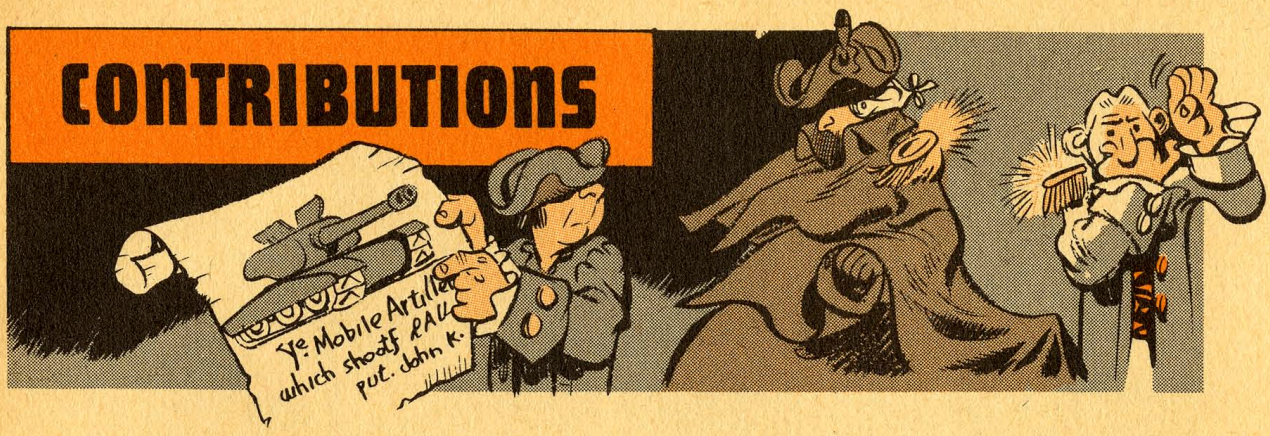
ENG 7&8-6133 Printer-developer, ozalid mod 100,000, 13 Jan 55

ENG 7,8&9-5382 Gen set, 1.5-KW, Homelite mod 24AD120-A3, 14 Jan 55

ENG 7,8&9-1064 Roller, road, towed, Ferguson mod RT-100-CE, 10 Jan 55

ENG 7,8&9-1213 Scraper, road, towed, LeTourneau-West'house LPO, 13 Jan 55

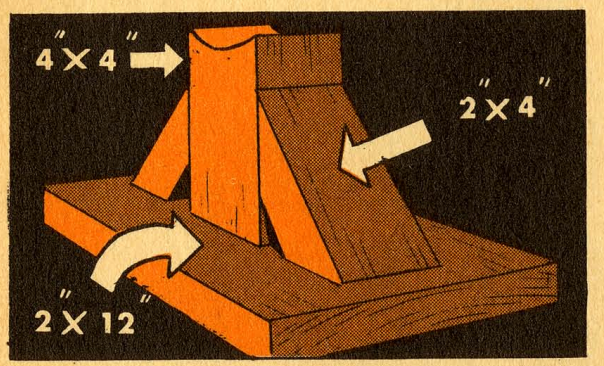
CONTRIBUTIONS



SEAL SAVERS

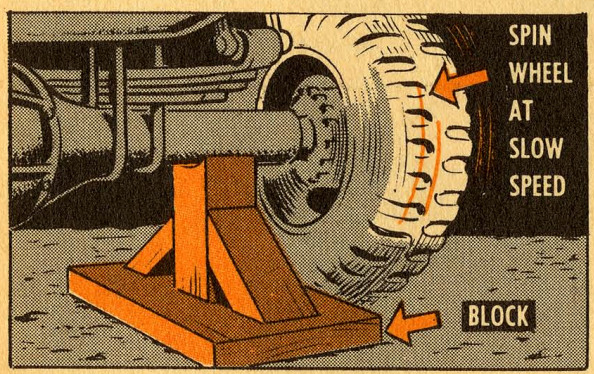
Dear Editor,

When we know we're not going to need our trucks for a couple of months we put them in limited storage. By blocking them up we can start them up, stick them in gear and spin their



wheels for a few minutes at a slow speed.

We've cut seal failures almost to



nothing by this trick of completely lubricating the power train. That way the trucks stay in top shape and are ready to roll when needed.

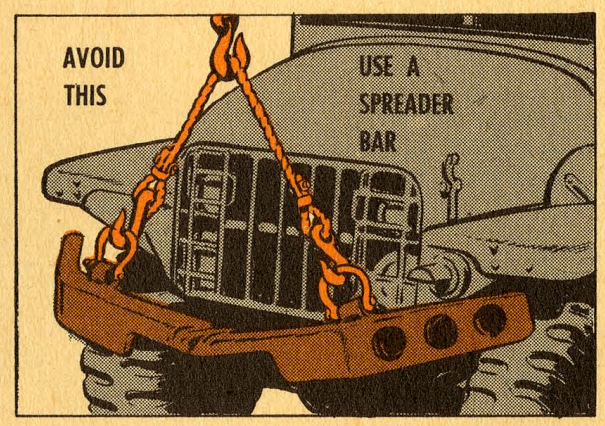
Maryland National Guard
Havre de Grace, Maryland

(Ed Note—Good deal.)

ENOUGH ROPE

Dear Editor,

Lifting and towing a vehicle by its front bumper is strictly for the birds. If you try it, expect to bend that bumper—they just can't take the weight. And when it bends, you can bet it'll pull the frame together in front, too.

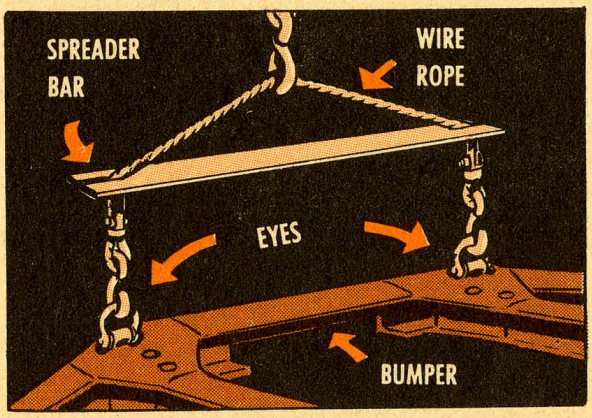


Besides hitching the tow-bar to the towed vehicle's front-axle, you've got to rely on the lifting hooks to take 'er off the ground. You can do this by clamping a wire rope across the hooks, and

picking the truck up by the rope. That way you'll raise the vehicle and not the devil.

Lt Frank J. Dougharty
APO 20, San Francisco

(Ed Note—One wire rope could be used to fit all wheeled vehicles. But use

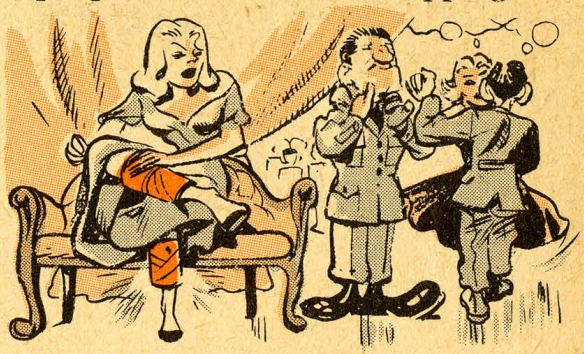


a spreader-bar to spread the rope. Else, you'll bend the eyes and bumper.)

NO SKIN GAME

Dear Editor,

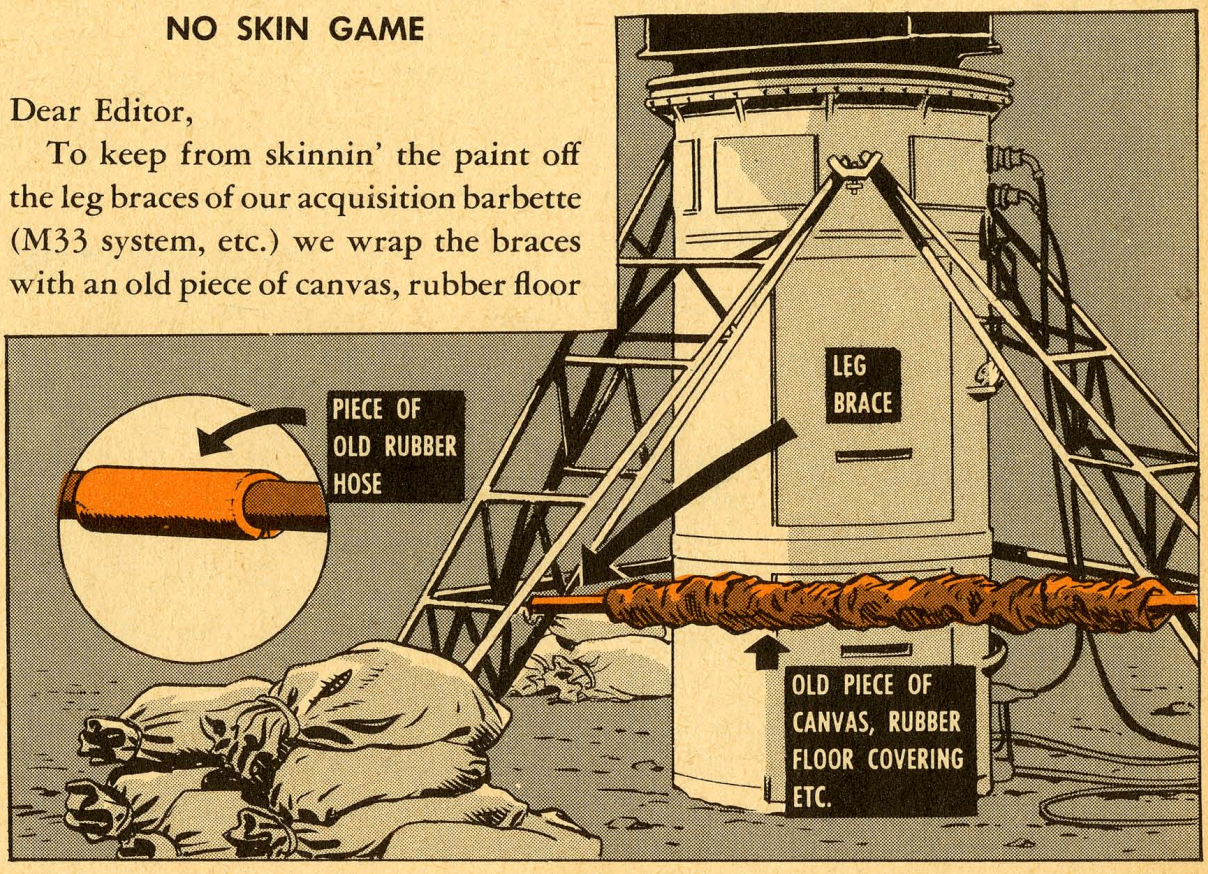
To keep from skinnin' the paint off the leg braces of our acquisition barbette (M33 system, etc.) we wrap the braces with an old piece of canvas, rubber floor covering or something. Then we can step up on 'em without chipping the



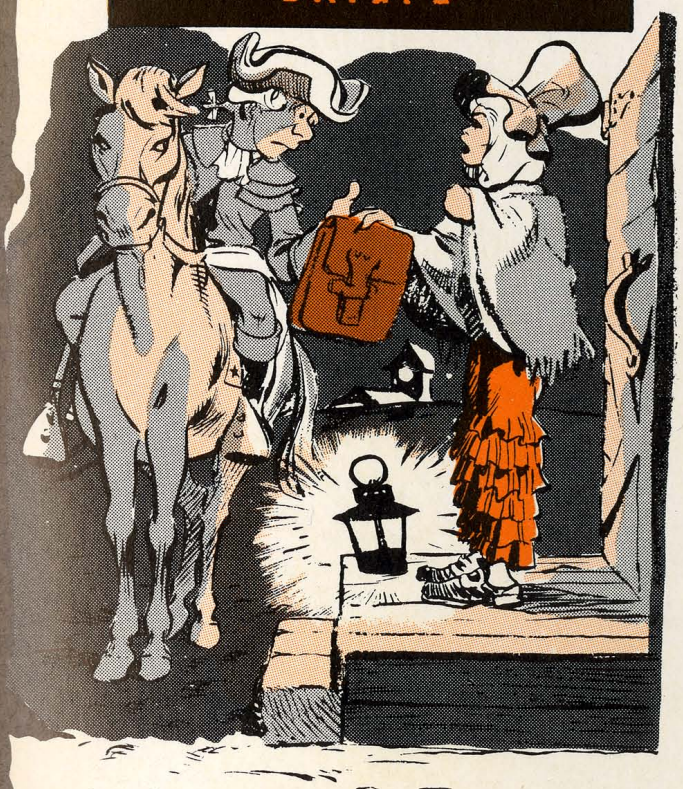
paint. We just slip off the covers comes inspection time.

M. A. Gleaton
Ft Belvoir, Va.

(Ed Note—Good idea. But how about opening a piece of old rubber hose and slipping it over the braces at the points where you want steps? If put on right, it wouldn't have to be removed for inspections.)



Connie Rodd's BRIEFS



Complaints, official

When you've got a complaint about your equipment—it's not made right, it doesn't work right, or it breaks down—make it official—like it says in SR 700-45-5. Send in a Form 468 (UER—Unsatisfactory Equipment Report) to the Chief of Ordnance for Ordnance equipment, and to the Chief of Engineers for Engineer equipment, both at Washington 25, D. C. They're mighty anxious to find out what's wrong with their equipment so's it can be fixed up right quick.

Ir for aib

Got an M75 armored infantry vehicle with less than enough equipment for using the infra-red periscope—and wondering what gives? Be patient and wonder no more. MWO G260-W17 is out with a couple of kits to outfit all M75's with a complete M19 scope set-up. Your Ordnance guys'll have the dope.

Why burn 'em out?

Always turn off the switches on your T46E1 range-finder when you remove or replace a lamp. Else you'll burn out the resistors. Make up a decal with something like: "Warning—turn off range-finder switches before removing lamp" and place it so you'll see it. The new range-finders already have 'em. An MWO is also on its way to take care of the situation.

Your shaft flexible?

The flexible drive shaft on your M38 (T154) computing sight in your self-propelled twin 40-mm M42, may be getting a little stiff in the joints. So dob a speck of grease on the retaining rings at each end coupling. But don't lubricate the shaft. It's already taken care of.

Man—when you tell about the pass experiences you had last night, you don't spare the details, do you?

PS doesn't want you to spare them, either—especially when you write in about a piece of equipment.

By giving the complete calling name of all parts and pieces of major items, you can help Sgt Half-Mast and Sgt Dozer find the answer to your problem in a hurry.

Just address it to Sgt Half-Mast or Sgt Dozer in care of **PS Magazine, Raritan Arsenal, Metuchen, N. J.**